

**SIGACCESS Annual Report**  
**July 2022 - June 2023**  
**Submitted by: Matt Huenerfauth, Chair**

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***SIGACCESS supports the international community of researchers and professionals applying computing and information technologies to empower individuals with disabilities and older adults. The SIG also promotes the professional interests of students and computing personnel with disabilities and strives to educate the public to support careers for people with disabilities.***

### **SIGACCESS Health and Viability**

Now celebrating its 52<sup>nd</sup> year, SIGACCESS continues to have both healthy membership and fund balance, allowing it to support workshops, create new accessibility resources, and initiate new scholarships. In 2022, our flagship ASSETS conference returned to an in-person modality (in Athens, Greece) with a virtual attendance option, with a total of 307 attendees.

Accessibility continues to grow as a research field, with increasing numbers of accessibility papers being presented at related conferences. ASSETS remains the premier venue for accessibility research work that is deeply rooted in the disability community. Submissions for our flagship ASSETS conference in 2022 were very healthy, with an acceptance rate of 26.5% (out of 132 submissions to the full-length technical paper track).

### **Diversity, Equity, and Inclusion**

In 2020, SIGACCESS initiated a Diversity and Inclusion Scholarship for the ASSETS 2020 conference, and this continued for a third year for the ASSETS 2022 conference. This new scholarship program builds off of the existing SIGACCESS Travel Scholarship Program, but it has a specific focus on encouraging promoting diversity and inclusion among participants at the ASSETS conference. This new scholarship covers registration for the (virtual) conference, and is intended to support practitioners, researchers, members of advocacy groups, individuals with disabilities or neurological difference who are interested in the field of computers and accessibility, to actively participate in the ASSETS conference. Since the 2022 ASSETS conference was the first to have an in-person modality since 2020, we also enabled the Diversity Equity and Inclusion chairs of the conference to use a portion of the funding to support in-person registration or travel costs for recipients of the award, to support in-person participation at the event. A majority of the D&I Scholarships still supported virtual conference registration, but a portion were used to support this in-person attendance.

The Diversity and Inclusion Scholarship aims to reach out to diverse communities that are underrepresented in the accessibility research field. Examples include, but are not limited to, faculty and students from historically Black and Hispanic-serving institutions in the United States, practitioners working in developing regions, members of Indigenous communities, or individuals bringing LGBTQ+ perspectives to accessible computing. Increasing participation from these communities will contribute to the academic perspective of ASSETS and help create a more supportive, welcoming and inclusive ASSETS

conference. The scholarship was actively advertised among these communities, and in 2022, this scholarship supported a total of 18 individuals, as follows: 9 in-person conference registration fees and \$500 reimbursement toward travel costs, 1 in-person conference attendance without additional travel cost reimbursement, and 3 virtual conference registrations, and 3 virtual workshop registrations.

For the online-only ASSETS 2021 conference, 42 scholarships were awarded to support the cost of virtual conference attendance, and, similarly, for the online-only ASSETS 2020 conference, 42 had also been awarded to support virtual registration.

To help diversify the community leadership, an open call was made for participation in the ASSETS 2022 Organizing Committee. Attention was paid to diversity in both the organizing and program committees, and the conference had Diversity and Inclusion Chairs (in addition to several Accessibility Chairs).

The SIGACCESS election in 2021 had been advertised openly, and the elected executive committee members of SIGACCESS (who began in July 2021) include individuals who are women, who identify as LGBTQIA+, and who are from non-U.S. institutions.

## **SIGACCESS Awards**

The **SIGACCESS Award for Outstanding Contributions to Computing and Accessibility** recognizes individuals who have made significant and lasting contributions to the development of computing technologies that improve the accessibility of media and services to people with disabilities. The 2022 recipient was **Professor Clayton Lewis**, who is an Emeritus Professor of Computer Science at the University of Colorado Boulder. Lewis served previously as Co-Director for Technology for the Coleman Institute for Cognitive Disabilities, and Fellow of the Institute of Cognitive Science, at CU, and as technology advisor to the director of the National Institute for Disability and Rehabilitation Research, US Department of Education. He is well known for his research on evaluation methods in user interface design. Two methods to which he and his colleagues have contributed, the thinking aloud method and the cognitive walkthrough, are in regular use in software development organizations around the world. He has also contributed to cognitive assistive technology, to programming language design, to educational technology, and to cognitive theory in causal attribution and learning. Before joining the University of Colorado, Lewis was Manager of Human Factors at IBM's Watson Research Center, where he was a member of the research staff from 1970 to 1973 and 1979 to 1984. He holds degrees from Princeton, MIT, and the University of Michigan. He has been honored by appointment to the ACM SIGCHI Academy, by the SIGCHI Social Impact Award, and by the Strache Leadership Award (CSUN Assistive Technology Conference).

The **ASSETS 2022 Best Paper** award went to Niharika Mathur (Georgia Tech), Tamara Zubatiy (Georgia Tech), Jiachen Li (Georgia Tech), Brian Jones (Georgia Tech), Elizabeth Mynatt (Northeastern University), for their work “**A Collaborative Approach to Support Medication Management in Older Adults with Mild Cognitive Impairment Using Conversational Assistants (CAs)**.” The authors described how improving medication management for older adults with Mild Cognitive Impairment (MCI) requires designing systems that support functional independence and provide compensatory strategies as their abilities change. In this study, the authors navigated designing for older adults with

gradual cognitive decline by creating a conversational “check-in” system for routine medication management. The authors presented a prototype system, which had been informed by the results of exploratory focus groups and design sessions conducted with older adults with MCI and their caregivers, as well as an evaluation of a 20-week deployment of the system. The authors’ results indicated that a conversational “check-in” medication management assistant increased system acceptance while also potentially decreasing the likelihood of accidental over-medication, a common concern for older adults dealing with MCI.

The **ASSETS 2022 Best Student Paper** was awarded to Mauricio Fontana de Vargas, Jiamin Dai, Karyn Moffatt (McGill University, Canada) for their work “**AAC with Automated Vocabulary from Photographs: Insights from School and Speech-Language Therapy Settings.**” The authors discussed how traditional AAC devices that are based on symbols are demanding on the memory and linguistic skills of people with complex communication needs. The authors present a prototype system to generate situation-specific communication boards, which consist of a combination of descriptive, narrative, and semantic related words and phrases that are inferred automatically from photographs. The authors conducted semi-structured interviews with AAC professionals to understand how the prototype was used to support language learning and communication therapy and school settings. The authors found that their approach reduced the workload of AAC users’ conversational partners, and it facilitated opportunities for language learning.

### **Significant New Work in Accessibility**

Continuing a trend in recent years, there was an increasing number of papers at the ASSETS'22 conference on research relating to artificial intelligence, datasets, and virtual/augmented/mixed reality technologies. For instance, full-length technical papers included:

- Steven M. Goodman, Erin Buehler, Patrick Clary, Andy Coenen, Aaron Donsbach, Tiffanie N. Horne, Michal Lahav, Robert MacDonald, Rain Breaw Michaels, Ajit Narayanan, Mahima Pushkarna, Joel Riley, Alex Santana, Lei Shi, Rachel Sweeney, Phil Weaver, Ann Yuan, and Meredith Ringel Morris. 2022. LaMPost: Design and Evaluation of an AI-assisted Email Writing Prototype for Adults with Dyslexia. In Proceedings of the 24th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '22). Association for Computing Machinery, New York, NY, USA, Article 24, 1–18. <https://doi.org/10.1145/3517428.3544819>
- Jonggi Hong, Jaina Gandhi, Ernest Essuah Mensah, Farnaz Zamiri Zeraati, Ebrima Jarjue, Kyungjun Lee, and Hernisa Kacorri. 2022. Blind Users Accessing Their Training Images in Teachable Object Recognizers. In Proceedings of the 24th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '22). Association for Computing Machinery, New York, NY, USA, Article 14, 1–18. <https://doi.org/10.1145/3517428.3544824>
- Rie Kamikubo, Lining Wang, Crystal Marte, Amnah Mahmood, and Hernisa Kacorri. 2022. Data Representativeness in Accessibility Datasets: A Meta-Analysis. In Proceedings of the 24th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '22). Association for Computing Machinery, New York, NY, USA, Article 8, 1–15. <https://doi.org/10.1145/3517428.3544826>
- Ziming Li, Shannon Connell, Wendy Dannels, and Roshan Peiris. 2022. SoundVizVR: Sound Indicators for Accessible Sounds in Virtual Reality for Deaf or

Hard-of-Hearing Users. In Proceedings of the 24th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '22). Association for Computing Machinery, New York, NY, USA, Article 5, 1–13. <https://doi.org/10.1145/3517428.3544817>

- Abraham Glasser, Fyodor Minakov, and Danielle Bragg. 2022. ASL Wiki: An Exploratory Interface for Crowdsourcing ASL Translations. In Proceedings of the 24th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '22). Association for Computing Machinery, New York, NY, USA, Article 16, 1–13. <https://doi.org/10.1145/3517428.3544827>

## **Conference Activity**

Our flagship conference, ASSETS 2022 was the first to be held with an in-person modality since COVID; the event also had a virtual attendance option. It was chaired by Jon Froehlich (University of Washington) with Kristen Shinohara (Rochester Institute of Technology) and Stephanie Ludi (University of North Texas) as Program Chairs.

This year, we helped to grow and diversify the field of accessibility through the ACM Student Research Competition, the ASSETS Doctoral Consortium, a mentoring program for new authors, and the previously mentioned diversity awards. ASSETS 2022 also featured a keynote presentation from Clayton Lewis (our SIGACCESS Award for Outstanding Contributions to Computing and Accessibility recipient), as well as an opening keynote presentation from Haben Girma, the first Deafblind person to graduate from Harvard Law School. Haben is a human rights lawyer advancing disability justice. President Obama named her a White House Champion of Change. She received the Helen Keller Achievement Award, a spot on the Forbes 30 Under 30 list, and TIME100 Talks. President Bill Clinton, Prime Minister Justin Trudeau, and Chancellor Angela Merkel have all honored Haben. Her keynote presentation discussed how she believes disability is an opportunity for innovation, and she teaches organizations the importance of choosing inclusion. The New York Times, Oprah Magazine, and TODAY Show featured her memoir, *Haben: The Deafblind Woman Who Conquered Harvard Law*.

## **SIGACCESS Programs**

With the Covid-19 pandemic sending ACM Conferences online, it became critical to understand how to make virtual conferences accessible and to share that knowledge across ACM. In 2020, we had commissioned a new resource for ACM conference organizers, and this guide became available in early 2021: *Accessible Virtual Conferences*. This comprehensive guide reviews the aspects of disability and assistive technology that are relevant to online events, then provides practical guidance covering planning, technical setup and presentations, with links to useful resources.

To mark SIGACCESS' 50<sup>th</sup> year, we had commissioned a history research project, which gathered interviews with prominent members of the SIG, and historical information. The report from this project contributed to the content of the historical panel presentation at the ASSETS 2021 conference, and it was published last year as an article within the SIGACCESS newsletter.

## **Key Issues**

Virtual conferences pose different accessibility challenges to physical ones, and for some people are much easier to access. Having run a virtual conference in 2020 and 2021, these events have and will include individuals with disabilities who may not have been able to attend an in-person event, as well as individuals from communities that are under-represented at our physical conferences. However, they can also be less engaging with reduced opportunities for community building and making connections, and this can be exacerbated by access barriers. With COVID conditions improving, SIGACCESS made the decision to commit to an in-person conference for ASSETS'2022, with a hybrid virtual attendance option. A challenge was to retain the advantages of virtual events while meeting the demand for a return to physical events and maintaining a strong community, in the presence of huge disparities in the ability of individuals to travel. Therefore, our ASSETS 2022 conference was hybrid event, and we are continuing this mixed hybrid modality for our ASSETS 2023 conference (to be held in New York City). Providing a lightweight option for virtual attendance (including pre-recorded videos and a discussion/chat system for virtual participants to engage in questions and conversation about paper) has been our approach to hybrid conferences thus far. However, in future years, we believe there are opportunities to find new ways to provide an engaging experience for virtual attendees and support them in interacting with in-person participants.

**SIGACT Annual Report  
July 2022- July 2023  
Submitted By: Tal Rabin**

## **1. Overview**

SIGACT's flagship conference, STOC, continues to be one of the premier venues for the best work in Theoretical Computer Science (TCS). Having weathered the COVID years, the conference continues to be well-attended, and (since 2017) has been expanded to a week-long "TheoryFest" which includes workshops and an array of invited talks, including ones showcasing work in adjacent communities, as well as a well-loved social program. In addition, we co-sponsor several top international conferences in more specialized areas, including PODC (distributed computing); SPAA (parallel computing); and SODA (algorithms).

The five-member SIGACT Executive Committee meets every month for two hours online, always with a packed agenda, and we have good lines of communication with the community. Some of our discussions have led to new initiatives (e.g., the Community Grants program), and others ideas are in the works, for example, a mechanism for longer-term and more stable fundraising, and solicitation of major gifts. In addition, SIGACT oversees two subcommittees which support communication and DEI, respectively: a Communications of the ACM (CACM) Research Highlights subcommittee of four members, and a Theory of Computer Science (TCS) Women subcommittee of five members.

## **2. DEI**

SIGACT committed funds to support travel to STOC for underrepresented groups, the "TCS for All" workshop, and one of the listed priorities of our new Community Grants program is "initiatives that aim to broaden participation in TCS." SIGACT also provided support for the "New Horizons in Theoretical Computer Science," an initiative of a companion organization, the Committee for the Advancement of Theoretical Computer Science. This was a summer school for undergraduate students which strongly encouraged participation by underrepresented groups.

In order to articulate our stance on DEI, and to elevate its visibility, we added a statement prominently on the main landing page for our website (referenced below).

One of the issues we dealt with this year was concern over the location of STOC (as part of FCRC) in Florida. We issued the following statement, read at the business meeting, and reproduced here:

SIGACT wishes to acknowledge and share in the legitimate concerns voiced by some in our community over holding STOC (and FCRC) in Florida, at a time when the state's stance on LGBTQ+ issues and abortion puts certain individuals at risk.

We would like to remind everyone of the relevant part of SIGACT's mission statement:

"SIGACT welcomes people of all backgrounds and identities—including age, race, gender,

sexual orientation, religion, nationality, physical ability, socioeconomic status, and political affiliation—and strives to empower and support a diverse research community. SIGACT is committed to the values of mutual respect, inclusion, and openness to new ideas and perspectives.”

We would like to assure you that in our actions as a scientific and professional organization, we remain fully committed to supporting these values in every way we can. In particular, we will strive to locate STOC in places where all community members can feel free to attend without feeling targeted or at risk.

We want to thank those of you who have spoken up with their concerns, and we encourage you all to continue to share your thoughts with the SIGACT Board, who are your elected representatives.

As a symbolic action, at our request and initiative, the FCRC leadership and ACM agreed to post a welcome banner in a prominent location at the FCRC’23 conference hotel venue which stated “The ACM Welcomes ALL to FCRC 2023”, with the word “ALL” emphasized by being bolded and italicized, and with it being underlined (artistically) with a rainbow paint swoosh to emphasize explicitly that persons from the LGBTQ+ community and supporters are fully included in “ALL”.

### **3. Awards and Recipients**

Knuth Prize: Éva Tardos

STOC Test of Time Award 30 years:  
Ethan Bernstein and Umesh Vazirani

STOC Test of Time Award 20 years:  
1 Miklos Ajtai, Ravi Kumar and D. Sivakumar  
2 Oded Regev

STOC Test of Time Award 10 years:  
Kenneth L. Clarkson and David Woodruff

SIGACT Distinguished Service Award:  
Jelani Nelson (UC Berkeley)

Kanellakis Prize:  
Michael Burrows, Google<sup>[L][SEP]</sup> Paolo Ferragina, University of Pisa<sup>[L][SEP]</sup> Giovanni Manzini,  
University of Pisa

Gödel Prize:  
1 Samuel Fiorini, Serge Massar, Sebastian Pokutta, Hans Raj Tiwary and Ronald de Wolf  
2 Thomas Rothvoss

Dijkstra Prize:  
1 Michael Ben-Or, Shafi Goldwasser and Avi Wigderson  
2 David Chaum, Claude Crépeau and Ivan Damgård

3 Tal Rabin and Michael Ben-Or

Best paper award STOC:

- 1 Sebastien Bubeck (Microsoft Research), Christian Coester (University of Oxford), and Yuval Rabani (Hebrew University)
- 2 Wei-Kai Lin (Northeastern U.), Ethan Mook (Northeastern U.), and Daniel Wichs (Northeastern U. and NTT Research)

Best student paper award STOC:

- 1 Aleksander Bjørn Grodt Christiansen (Technical University of Denmark, DTU)
- 2 Guy Blanc (Stanford University)

#### **4. Significant papers in proceedings**

It is hard to judge now which papers will turn out to open up new areas (we have Test of Time awards for this); however our STOC best paper winners represent some of the most significant papers in the judgment of the community. For STOC 2023, these included fundamental advances in the areas of online algorithms, cryptography and privacy, adaptive sampling, and graph coloring in a distributed setting. The specific papers are below:

The Randomized k-Server Conjecture is False!

Sebastien Bubeck (Microsoft Research); Christian Coester (University of Oxford); Yuval Rabani (Hebrew University)

Doubly Efficient Private Information Retrieval and Fully Homomorphic RAM Computation from Ring LWE.

Wei-Kai Lin, Ethan Mook (Northeastern); Daniel Wichs (Northeastern & NTT Research)

and the best student papers were:

Subsampling Suffices for Adaptive Data Analysis.

Guy Blanc (Stanford University)

The Power of Multi-Step Vizing chains.

Aleksander Bjørn Grodt Christiansen (Technical University of Denmark, DTU)

#### **5. Conference Activity**

Our flagship conference is STOC. In 2023 this was part of FCRC 2023. In STOC 2023, we increased the size of the program committee to reduce the number of papers that each member needs to review. We also increased the number of accepted papers. Both of these changes responded to desires expressed by the TCS community, and we believe they make the conference more robust both in its administration and in its scope and reach. Submission by PC members was allowed, as has been the policy since 2019. Submissions were double-blind. A record number of papers (480) were submitted this year. Attendance at STOC in June 2022 hit a record level of 450 in 2022 (in Rome), though was down this year at FCRC, possibly due to its location. In STOC 2023, we increased the size of the program committee to reduce the number of papers that each member needs to review.

We also increased the number of accepted papers. Both of these changes responded to desires expressed by the TCS community, and we believe they make the conference more robust both in its administration and in its scope and reach.

The following conferences were put on “in cooperation” with SIGACT: PODC 2023, SPAA 2023, HIPC 2023, and SODA 2023. PODC remains relatively stable except for this past year at FCRC where again there was a drop in submissions. SODA is co-sponsored with SIAM and occurred in Florence, Italy. There were 446 participants, comparable to the last time it was held in Europe (Barcelona 2017) but significantly higher than the attendance in US cities in the previous years. There were double-blind submissions and a rebuttal phase. The PC produced a study of double blind submissions which points out some of the costs. SODA colocates with related conferences and workshops like ALENEX and SOSA. SPAA 2023 was held at FCRC in Orlando. SPAA has co-located on alternate years with PODC or FCRC, which tends to give a slight boost in attendance.

In summary, the participation rates have been healthy and increasing, especially for STOC and SODA, but this year at FCRC in Orlando, we seem to have decline in participants all the conferences, especially STOC and PODC, despite increases in submissions to STOC and increases in accepted papers to STOC. Based on the feedback from individuals in the community, we conclude that the problem lay with the location which was not appealing to our community. Double blind submissions have become the norm, though the benefits vs costs are still being studied. A rebuttal phase is not common, though correspondence with authors when needed for clarification of correctness is often done on a case by case basis.

## **6. Special projects and Activities**

SIGACT fields many requests for funding and support for a range of initiatives. In the past these have been ad-hoc requests emailed to the SIGACT Executive Committee members. It is challenging to make decisions in an on-line fashion about funding priorities and levels, and it doesn't help that our (modest) annual surplus fluctuates from year to year, particularly in recent years due to COVID.

To address these issues, and to provide a more uniform, accessible, and fair mechanism to request funding, we have initiated the SIGACT Community Grants program. We reproduce the description from the call for proposals (whose full text can be found here: <https://www.sigact.org/grants/community.html>):

SIGACT invites applications for small grants (~\$2K–\$20K) in support of its mission to “foster and promote the discovery and dissemination of high quality research in the domain of theoretical computer science.”

Grants can be in one of these areas of interest, but worthy ideas outside of these areas can also receive support.

- Conferences or events that benefit the TCS community.
- Projects that strengthen connections to adjacent conferences and communities.
- Initiatives that nurture the “theory pipeline” including undergrads, grads, postdocs, young faculty.
- Initiatives that aim to broaden participation in TCS.
- Seed funding for projects that align with the mission of SIGACT, e.g., a new conference, a

new journal.

Two rounds of grants will be made each calendar year. For the first one, applications will be accepted until March 1, with decisions by April 1. The second cycle has a due date of September 1, with decisions by October 1. The amount available for grants is determined by the surplus in the SIGACT budget from the previous Fiscal Year (ending in June), and is expected to vary from year to year.

## **7. Key issues to face**

A major issue under discussion is that of remote participation at conferences. This is a complex issue as it relates to multiple problems currently existing in our world: global warming and wanting to reduce carbon footprint and issues of visa attainability. On the other hand, remote participation seems to offer a poor substitute for the in-person experience, and the cost of providing it in typical conference venues is very high. Utilization has been low and the interactive features are rarely used.

We have currently decided to create recordings of talks prior to the conference instead of providing full-scale remote participation. This issue may need to be revisited if it seems that technology can provide for easier, better and cheaper remote participation. The level of community concern about travel costs (logistical, monetary, and climate-related) is not likely to lessen.

We have begun initial conversations about holding a “federated conference” for TCS. This is an idea that will require buy-in and discussion from the broader community, but we believe there are many potential benefits.

**SIGAda Annual Report**  
**July 1, 2022 - June 30, 2023**  
**Submitted By: Tucker Taft, Chair ACM SIGAda**

Started in 1994, the ACM SIGAda Awards recognize individuals and organizations that have made outstanding contributions to the Ada community and to SIGAda. Robert Dewar was a key contributor to the Ada community and a co-founder of Ada Core Technologies, who died in 2015. The “Robert Dewar Award for Outstanding Ada Community Contributions” is given for broad, lasting contributions to Ada technology and usage. The SIGAda Distinguished Service Award is given for exceptional contributions to SIGAda activities and products.

In 2022, the **Robert Dewar Award for Outstanding Ada Community Contributions** was awarded to Fabien Chouteau, an engineer at AdaCore, for leading AdaCore’s Ada Community Outreach for many years, including coordinating the “Make for Ada” and “Ada Crate of the Year” contests, and fostering the development of the Alire package manager for Ada.

The 2022 **ACM SIGAda Distinguished Service Award** was awarded to Luis Miguel Pinho, a Professor and Researcher in the Computer Engineering Department of the Polytechnic of Porto - School of Engineering (ISEP), in Portugal. Miguel is the current editor of Ada Letters and serves as the SIGAda Secretary-Treasurer. He served as General Chair and Program Co-Chair of Ada-Europe 2006, and Program Co-Chair of Ada-Europe 2012 and Ada-Europe 2016. He was Editor-in-Chief of the Ada User Journal, which has shared content with the SIGAda Ada Letters publication over the past several years.

## **CONFERENCES/WORKSHOPS**

- **HILT (High Integrity Language Technology) 2022**

The SIGAda Executive Committee is continuing the two-year cycle for High Integrity Language Technology (HILT) events.

The HILT series of conferences and workshops focuses on the use of High Integrity Language Technology to address challenging issues in the engineering of software-intensive critical systems. The seventh event was held October 14, 2022 as part of ASE 2022 in Detroit, MI.

HILT 2022 focused on the increasing synergies between formal methods (theorem provers, SAT, SMT, etc.), advanced static analysis (model checking, abstract interpretation), software design and modeling, and safety-oriented languages. From separate fields of research, we now observe a stronger interconnection between formal methods, advanced analytics, modeling and design of software, and safety features in programming languages. Programming languages for safety-critical systems now routinely integrate theorem proving capabilities like C/ACSL or Ada/SPARK2014. Theorem provers such as Coq, Lean, or Isabelle have established themselves as a viable strategy to implement compilers or properly define the semantics of domain-specific languages. Tools for verifying modeling languages such as AADL, Lustre, and Simulink are becoming more widely available, and with the emergence of the Rust language and the release of Ada 2022, safety is rising to the top of concerns for critical systems developers.

The HILT'2022 workshop investigated ways High Integrity Language Technologies can leverage recent advances in practical formal methods and language design to deliver the next generation of safety-critical systems.

#### Workshop Co-Chairs

- Jerome Hugues, SEI/CMU
- Tucker Taft, AdaCore

#### Program Committee

- Robert Bocchino, NASA/Caltech Jet Propulsion Laboratory
- Claire Dross, AdaCore, France
- Florian Gilcher, Ferrous Systems, Germany
- John Hatcliff, Kansas State University
- Laura Humphrey, Air Force Research Laboratory, USA
- John Kassie, Collins Aerospace
- Nikolai Kosmatov, CEA List, France
- Nicholas Matsakis, AWS, USA
- Sara Royuela, Barcelona Supercomputing Center, Spain
- Ina Schaefer
- Ina Schaefer, Karlsruhe Institute of Technology (KIT), Germany
- Alok Srivastava, SAIC Inc., USA
- Cesare Tinelli, University of Iowa
- Joyce Tokar, Raytheon Technologies
- Uwe Zimmer, Australia

#### URLs:

- ASE 2022: <https://conf.researchr.org/home/ase-2022>
- HILT 2022 Information: <https://conf.researchr.org/home/hilt-2022>
- HILT 2020 Program:
  - <https://conf.researchr.org/track/ase-2022/ase-2022-workshop-hilt-22#program>
- ACM SIGAda: <http://sigada.org>

#### Ada Letters

Under the leadership of managing editor Alok Srivastava, we continued to publish Ada Letters. Luis Miguel Pinho has taken over as the technical editor of Ada Letters. SIGAda and Ada-Europe in particular have been discussing additional ways to coordinate our activities and share content across our user publications, to ensure efficient and effective connections to the industrial and academic computer science and information technology communities. We completed our initial integration of selected Ada-Europe content into *Ada Letters*.

We will continue to publish two to three issues of the Ada Letters newsletter each year, seek participation in the form of contributing articles and papers, and publish special issues providing archived proceedings for both the HILT and IRTAW workshops.

#### PROGRAMS

- **Significant Programs that provided a springboard for further technical efforts**

A formal liaison exists between SIGAda and ISO WG9 and that liaison is active. ISO/IEC JTC1/SC22 WG9 is that body of international representatives responsible for the maintenance and evolution of the Ada International Standard. The National Bodies

represented on WG9 have included Belgium, Canada, France, Germany, Italy, Japan, Switzerland, the United Kingdom, and the United States.

In March 2007 the ISO (the International Organization for Standardization) in Geneva, Switzerland announced the formal completion of the process to revise the Ada 95 language, with the publication of the Ada 2005 standard — officially named ISO/IEC 8652:1995/Amd 1:2007. This announcement culminated a collaborative international effort under ISO's Ada Working Group (WG9) to enhance the 1995 version of the Ada language.

In November 2012, ISO (the International Organization for Standardization) in Geneva, Switzerland, announced the successful 14-0 ballot on the final draft of the Ada 2012 Standard, the document arising from the collaborative international process under ISO's Ada Working Group (WG9) to revise the Ada 2005 standard. The official publication of Ada 2012 occurred in December 2012 -- officially named ISO/IEC 8652:2012.

In February 2022, ISO approved the draft Ada 2022 Standard, which was ten years in the making. It brings light-weight parallelism to Ada, along with numerous enhancements to various high-level programming features. In May 2023, ISO finalized the editing process for the new Ada standard, officially identified as ISO/IEC 8652:2023.

The ISO WG9 working group has semi-annual meetings of WG 9, generally scheduled to coincide with the major conferences or workshops organized by ACM SIGAda and Ada-Europe. Officials of both organizations are active participants in the work of WG 9. Both groups have the status of Category C liaison with WG 9.

SIGAda members continue to contribute to 24772-2, Guidance to avoiding vulnerabilities in programming languages – Vulnerability descriptions for the programming language Ada, which is being transitioned from a Technical Report to an International Standard, as ISO now requires documents that contain recommendations be standards rather than technical reports.

At least one SIGAda Officer participates and represents the membership at the WG9 meetings held twice each year. This year the meetings were held at the 2023 Ada Europe conference in Lisbon, Portugal. Tucker Taft (President) represented SIGAda for these meetings and in the balloting.

## **FUTURE ISSUES**

- **Summary of key technical issues to deal with in the next 2-3 years**

As security issues become more and more urgent in the software industry, there has been increased attention on formal methods as a way to reduce security vulnerabilities within system software. The contract-based programming features of Ada 2012 have emerged as a very successful addition to the safety- and security-oriented features of Ada, allowing Ada to remain on the vanguard of technologies to address the growing security challenge. Over the next 2 years, SIGAda will continue to work with Ada tool vendors and other Ada-oriented organizations such as the Ada Resource Association, Ada-Europe, and the International Ada Real-Time Workshop (IRTAW) to increase the awareness of Ada and its value to the industrial community, which is facing growing security threats.

To summarize, SIGAda is focused on providing the greatest return on investment to our members by continuing our efforts to expand and improve our value to our membership.

- **SIGAda conference and workshop activity**

As mentioned above, the SIGAda executive committee has decided to continue a bi-annual workshop schedule, with the most recent SIGAda/HILT workshop taking place in October 2022 in Detroit, MI, in association with the 2022 IEEE/ACM International Conference on Automated Software Engineering (ASE 2022), focused on languages and tools supporting a rigorous approach to software development (<https://conf.researchr.org/track/ase-2022/ase-2022-workshop-hilt-22>). In conjunction with annual Ada-Europe conferences and bi-annual IRTAW workshops, we believe this schedule best fits the scale of the Ada community, and the monetary and organizational resources of ACM SIGAda.

- **ACM overhead fees and SIGAda viability**

Due to the recent change in the structure of ACM overhead fees, where the minimum annual fee to an ACM SIG is now \$25K while the Digital Library reimbursement remains at \$10K, SIGAda will probably need to dissolve this year. Our annual net revenue is less than \$5K, so the net \$15K increase in overhead fees means a SIG structured like SIGAda is not viable. Our current plan, which has received initial approval from the leadership of SIGPLAN, is to dissolve SIGAda and convene a technical committee within SIGPLAN, focused on Ada and other high-integrity-oriented languages such as Rust. This technical committee would try to continue to serve the Ada community in so far as possible, by continuing to organize a bi-annual HILT (High Integrity Language Technology) workshop, and periodic (probably only electronic) publication of a newsletter similar to Ada Letters.

**ACM SIGAI Annual Report  
July 2022- July 2023  
Submitted By: Sanmay Das**

## **Health and Viability**

ACM SIGAI continues to serve the community of academic educators and researchers, professional practitioners, and students through its five main concrete activities.

1. Conference sponsorship: We sponsor or co-sponsor several important conferences. Since historically the major AI and machine learning conferences are not ACM sponsored, SIGAI has focused especially on co-sponsoring conferences at the intersection of AI and other areas, and we continue to do this very successfully, including in AI, ethics, and society, HCI, Robotics, Software Engineering, and Mechanism Design. We have successfully added major new conferences (e.g. EAAMO and AIES) to our portfolio over the last 5-6 years.
2. Awards: We present three major awards (see below for details).
3. Communication with our membership and the broader AI community: We pursue several communication channels, and our partnership with AIHub in the last few years has enabled better communication with our membership as well as contributing to the mission of responsible reporting on AI.
4. Support for conference attendance: We strive to help students and those without great access to resources to attend conferences we co-sponsor or are in cooperation with. After Covid, this year has seen a major uptick in demand.
5. Promoting AI education, publications and public outreach activities: We actively seek out ways to engage with the education community and in public outreach. For example, in the last year, we established a new collaboration with the Educational Advances in AI conference to support new and future AI educators.

The sections below will also expand on these in more detail.

## **Efforts related to Diversity, Equity, and Inclusion**

We have several avenues through which we promote diversity, equity, and inclusion. Primary among these had been an effort to fund students from underrepresented groups to attend conferences through a centralized selection process where we could have sufficient numbers as well as insight into the entire pool of applicants to ensure diversity. However, following changes in ACM processes, we have had to rework our travel award scheme. This means we no longer support individual students travelling to conferences, but provide conferences with a grant which they then allocate. We used this opportunity to relax our criteria to enable conferences to target other at-need groups beyond students if they wish. We are monitoring the allocation of these awards for EDIA purposes, and stressing the importance of considering DEI in allocation to the conferences we award grants to.

## **Awards and recipients**

In order to promote work in AI and recognize contributions from students, researchers, and industry, SIGAI distributes three awards annually focused on each of these areas. More information on each of these awards including past winners, nomination procedures, and deadlines, are available at the SIGAI Awards Website: <https://sigai.acm.org/main/sigai-awards/>. In the July 1, 2022 - June 30, 2023 we distributed the following awards.

The ACM SIGAI Autonomous Agents Research Award is presented for excellence in research in the area of autonomous agents. The recipient is invited to give a talk at the International Conference on Autonomous Agents and Multiagent Systems (AAMAS). The 2023 ACM SIGAI Autonomous Agents Research Award was presented at AAMAS 2023 in London, United Kingdom to Professor Edith Elkind, Professor of Computer Science at the University of Oxford. Prof. Elkind's work provides fundamental understanding of economic paradigms in multiagent systems, with a particular focus on computational social choice and game theory. She has made important contributions to the computational analysis of cooperative games, as well as to the studies of structured domains in elections, and hedonic games. Professor Elkind supervised two PhD theses that won the Victor Lesser Distinguished Dissertation Award. Her service to the community has been extraordinary; among many other roles, she has served both as a program chair and a general chair for AAMAS, and as a program chair for IJCAI, ACM EC, WINE, and COMSOC.

ACM SIGAI also sponsors the ACM SIGAI Industry Award for Excellence in AI , an annual award which is given to an individual or team in industry who created a fielded AI application in recent years that demonstrates the power of AI techniques via a combination of the following features: novelty of application area, novelty and technical excellence of the approach, importance of AI techniques for the approach and actual and predicted societal impact of the application. The 2022 ACM SIGAI Industry Award for Excellence in Artificial Intelligence was awarded at IJCAI 2022 Industry Day in Vienna, Austria to Sony's Gran Turismo Sophy (TM). Sony's Gran Turismo Sophy(TM) is a project developed by Sony AI, Sony Interactive Entertainment and Polyphony Digital. Gran Turismo (GT) Sophy is a collection of agents trained using reinforcement learning (RL) techniques to race in Gran Turismo, a hyper-realistic, physics-based automotive racing simulator. The GT Sophy team developed novel, state-of-the-art RL methods for this purpose. Racing against some of the world's best e-sports drivers, GT Sophy has not only performed at world-class levels, it also won a team event in October 2022 by an impressive margin. GT Sophy has demonstrated that SOTA RL can be applied effectively to continuous control problems requiring performance at the edge of human capabilities, while respecting the informal norms and protocols associated with racing. Apart from the impact on gaming, the technology offers potential societal benefits in areas such as simulation-based training and autonomous vehicle development, among others.

ACM SIGAI also sponsors, jointly with AAI, the AAI/ACM SIGAI Doctoral Dissertation Award to recognize and encourage superior research and writing by doctoral candidates in AI. This annual award is presented at the AAI Conference on AI in the form of a certificate and is accompanied by the option to present the dissertation at the AAI conference as well as to submit a six page summary to both the AAI proceedings and the ACM SIGAI newsletter. Unfortunately, the committee has fallen behind on selecting the award winner; we expect the next award winner to be announced this Fall, with the award to be presented at AAI 2024.

## **Significant papers on new areas that were published in proceedings**

A Generalized Inverted Dirichlet Predictive Model for Activity Recognition using Small Training Data by Jiaxun Guo, Manar Amayri, Wentao Fan and Nizar Bouguila.  
Best Application Paper award at IEA/AIE 2023

Evolution of Prioritized EL Ontologie by Rim Mohamed, Zied Loukil, Faiez Gargouri and Zied Bouraoui.  
Best Theory Paper award at IEA/AIE 2023

An Oriented Attention Model for Infectious Disease Cases Prediction by Peisong Zhang, Zhijin Wang, Guoqing Chao, Yaohui Huang and Jingwen Yan.  
Best Special Session Paper award at IEA/AIE 2023

Multi-Granular Large Scale Group Decision-Making Method with a new Consensus Measure Based on Clustering of Alternatives in Modifiable Scenarios by Jose Ramon Trillo, Ignacio Javier Perez, Enrique Herrera-Viedma, Juan Antonio Morente-Molinera and Francisco Javier Cabrerizo.  
Best Technical Presentation award at IEA/AIE 2023

Virtual Backlash: Nonverbal expression of dominance leads to less liking of dominant female versus male agents by Janet Wessler, Tanja Schneeberger, Leon Christidis and Patrick Gebhard.  
Best Paper award at IVA 2022

Hetero-Rec: Optimal Deployment of Embeddings for High-Speed Recommendations by Chinmay N Mahajan, Ashwin Krishnan, Manoj Nambiar and Rekha Singhal.  
Best Paper award at AILMLSystems 2022

Data efficient class incremental learning by Jayateja Kalla and Soma Biswas.  
Best Doctoral Symposium award at AILMLSystems 2022

Bias, Consistency, and Partisanship in U.S. Asylum Cases: A Machine Learning Analysis of Extraneous Factors in Immigration Court Decisions by Vyoma Raman, Catherine Vera and C.J. Manna  
Best Paper award at EAAMO 2022

Improving Access to Housing and Supportive Services for Runaway and Homeless Youth: Reducing Vulnerability to Human Trafficking in New York City by Yaren Bilge Kaya, Kayse Maass, Geri Dimas, Renata Konrad, Andrew Trapp and Meredith Dank  
Best Student paper award at EAAMO 2022

On Meritocracy in Optimal Set Selection by Thomas Kleine Buening, Meirav Segal, Debabrota Basu, Anne-Marie George and Christos Dimitrakakis  
Best Student paper award at EAAMO 2022

Dimensions of Diversity in Human Perceptions of Algorithmic Fairness by Nina Grgić-Hlača, Gabriel Lima, Adrian Weller and Elissa M. Redmiles  
New Horizons award at EAAMO 2022

## **Conference activity**

2022-23 has represented a return to normality in our conference programming after the disruptions of the past couple of years. ACM SIGAI has decided that, despite the move back towards in person conferences, our preference is that conferences provide support for remote attendance and, in particular, remote attendance for speakers. This is now communicated to conferences when we accept sponsorship and in-cooperation requests. We have seen an influx of new requests for in-cooperation agreements and are reviewing our policies around accepting these and their eligibility for travel award grants.

ACM SIGAI sponsored the following conferences in 2022 and 2023:

- EAAMO '22
- WI-IAT '22
- ASE 2022
- CSCS 2022
- HRI 2023
- IUI 2023
- AIES 2023

and it will sponsor the following conferences coming up in 2023 and 2024:

- ASE 2023
- IVA 2023
- EAAMO 2023
- K-CAP 2023
- CSCS 2023
- IUI 2024
- HRI 2024
- ASE 2024

ACM SIGAI supported the following in-cooperation events covering a wide thematic and geographical range across the international AI community:

- RecSys 2022
- BIOSTEC 2023
- ICPRAM 2023
- ICAART 2023
- FDG 2023
- IMPROVE 2023
- ICEIS 2023
- AAMAS 2023
- ICAIL 2023
- CIKS 2023
- SIMULTECH 2023
- Delta 2023
- IEA/AIE 2023
- AICS 2023

**Special projects and non-conference programs that provided service to some part of your technical community**

## Communication with membership:

In the past year, we have published four issues of AI Matters (Volume 8, Issue 3&4 in 2022, and Volume 9, Issue 1&2 in 2023). In almost all the issues, we have “Conference Reports” by Dr. Louise Dennis and “AI Events” by Dr. Dilini Samarasinghe. Excitingly, in this year, we have gotten back the “Paper Précis” column, where we invite presentations about recently awarded or award-nominated papers from AI venues. In our latest issue (Volume 9, Issue 2), we received three submissions to this column, covering topics such as agent navigation, causality, and 3D human motion modeling. This column is managed by Dr. Dongkuan Xu, a new member of the SIGAI AI Matters editor team. Dr. Xu is currently an Assistant Professor in the Computer Science department of North Carolina State University. His research focuses on “Landed Generative AI (LaGAI)”, including solving full-stack LaGAI problems ranging from theoretical optimization methods to data-centric strategies and to co-design of algorithms and hardware. Finally, AI Matters is the venue for publishing EAAI-23 Blue Sky Ideas in AI Education, reported by Guerzhoy et al.

The ACM SIGAI Twitter account (@acm\_sigai) continues to be a useful avenue to communicate with our members and the wider public about AI in research and industry. The account has been helpful to disseminate information about the winners of the various awards that we support and funding opportunities that are available. AIHub remains a key partnership. In addition to sending monthly digests of AI news and information to our membership, we are sharing posts that link to their articles. We also recently had a (virtual) meeting with two key people who run the AIHub to feedback any communication support needs SIGAI might have, this also proved useful to understand how other organizations that support the AIHub are running their communications. The accounts follower count has risen slightly over the year, from 833 to 949. Over the past year, our posts were viewed an average of 2415.33 times each, an increase on last year. This is without paying for any promotional support from Twitter to boost posts, etc. The co-information officer in charge is monitoring the ongoing ups and downs in the utility of Twitter (or X as it has recently been renamed) for supporting SIGAI.

## AI Education:

ACM SIGAI co-funded the AAI/ACM SIGAI New and Future AI Educator Program at EAAI-23, the 13th Symposium on Educational Advances in Artificial Intelligence, collocated with AAI-23. EAAI provides a venue for researchers and educators to discuss pedagogical issues and share resources related to teaching and using AI in education across a variety of curricular levels (K-12 through postgraduate training), with an emphasis on undergraduate and graduate teaching and learning. The New and Future AI Educator Program provides a platform for new educators (early career lecturers, assistant professors, and other university or secondary school faculty) and future educators (full-time PhD candidates or postdocs at colleges and universities who intend a career in academia) to attend EAAI to actively share and discuss their ideas and visions for AI education. Specifically, the program provided partial travel support for 4 awardees to attend EAAI-23 in Toronto, CA. Awardees presented their blue sky ideas at the symposium in February 2023, enabling discussions and providing networking opportunities for new educators. They further collaborated on an article summarizing their ideas and visions for AI education. This article is currently pending publication in the ACM SIGAI AI Matters magazine.

## Job Fair:

The ninth edition of the joint AAAI/ACM SIGAI job fair ran successfully in February 2023. After two years of fully virtual format, this year the job fair brought together over 21 companies, universities, and recruiters in person during the AAAI-23 conference in Washington DC. The goal of the job fair is connecting academics in various levels to employers from industry and academia as well as showcasing successful collaborations between members of the AI community and the industry.

We continued to maintain a dedicated domain for the fair <https://aaaijobfair.com/>, and we provided a link on that site for job-seekers to submit resumes or CVs, which were distributed among participating organizations prior to the event. Over 150 participants registered and shared their CVs/resumes with the recruiters and many more attended the in-person event. The job fair ran for two and half hours with many staying longer to continue the conversations. In the beginning of the event, one representative from each organization had the opportunity to introduce the organization and its job opening(s) for about two minutes. We asked all companies to submit a single slide along with additional flyers about available positions or short video content about their organizations. The flyers and short videos were made accessible through AAAI/SIGAI webpage prior to the event; the slides were projected in the beginning of the event. Afterwards, students and professionals looking for internships or jobs had the opportunity to meet with the representatives from recruiting organizations in an informal "meet-and-greet" atmosphere. The participating employers were both from academic organizations and industry from all over the world (e.g. USA, Germany, Japan, China, and UAE).

We hope that all participants and recruiters of this job fair were able to fully utilize the opportunities provided in this in-person event. We would like to thank AAAI, in particular Chesley Grove and Meredith Ellison, for all their help in organizing the job fair and dealing with numerous last-minute requests. We encourage the community to reach us with any comments or suggestions that can help continue or improve these series.

## Policy Involvement:

Larry Medsker continues his Public Policy Officer work as a liaison with the ACM US Technology Policy Committee (USTPC). His work includes participation in writing statements and reports, serving on panels providing information to legislative groups, and assisting with the production of AI-related ACM TechBriefs (<https://www.acm.org/public-policy/techbriefs>). He plans to renew sharing of public policy news through the SIGAI blog and convey opportunities for SIGAI members to be expert resources to policymakers. His recent selection as the new Chair of USTPC will provide additional opportunities to work with SIGAI members.

## **Brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years**

We focus here on two big questions. There is continuing uncertainty in both the world of conferences and in the world of AI today. There has clearly been a resurgence of interest in attending in-person events; how does one balance that with concerns about exclusion (especially of the global south and of those with medical vulnerabilities in the wake of a

pandemic), climate change, and even attention in an era of venue proliferation? One specific issue that has come up is about incentives for attendance when conferences offer hybrid participation options. Separately, the rise of Generative AI is changing the landscape of AI. The blinding focus on this area and topic has both opportunities and risks for those associated with AI more broadly, and we must think carefully about how best to engage across all the ways in which we try to serve our mission.

**SIGAPP FY'23 Annual Report**  
**July 2022 - June 2023**  
**Submitted by: Tei-Wei Kuo, Chair**

## **SIGAPP Mission**

The SIGAPP mission is to further the interests of the computing professionals engaged in the development of new computing applications and applications areas and the transfer of computing technology to new problem domains.

## **SIGAPP Officers**

Chair - Tei-Wei Kuo, National Taiwan University, Taipei, Taiwan  
Vice Chair – JungYeop (John) Kim, Utica University, NY, USA  
Treasurer – Juw Won Park, University of Louisville, KY, USA  
Secretary – Austin Hanson, Oracle Corporation, SD, USA  
Immediate Past Chair – Jiman Hong, Soongsil University, Seoul, Korea  
ACM Program Coordinator, Katie Balben, ACM HQ

## **1. Comments on the ways in which SIGAPP is a Healthy and Viable Organization**

### **(1) SIGAPP Membership and Benefits for Members**

In order to attract and retain members, SIGAPP has expanded the benefits offered to its members. The strength and uniqueness of SIGAPP among ACM SIGs provide a valuable platform for scientific diversity, offering a crosscutting of multiple disciplines within the ACM community. As of 2023, SIGAPP has a total of 519 members. Although the number of membership has been increasing over the past few years, there was a temporary decrease last year. Nevertheless, officers remain focusing on enhancing the SIG by working with ACM SGB to increase the membership population and to establish a new journal on applied computing. Additionally, SIGAPP plans to develop mobile apps and to utilize social networking sites (SNSs) in the future to expand and strengthen the interpersonal network within the SIGAPP community and foster stronger relationships among its members.

The member benefits provided by SIGAPP include:

- Subscription to Applied Computing Review (Published quarterly)
- Reduced registration fee for SIGAPP conferences (SAC, RACS)
- CD-ROM proceedings of SAC
- Access to all SIGAPP materials in the ACM Digital Library, including SAC conference proceedings and Applied Computing Review (ACR)

Furthermore, the community benefits offered by SIGAPP include:

- 100% sponsorship of SAC and RACS conferences
- 50% sponsorship of PEARC conference
- Best Paper/Poster awards at SAC, RACS, and PEARC conferences
- Distinguished Service Award for outstanding service to SAC and RACS
- Student travel support to SAC, RACS, and PEARC conferences
- SIGAPP website, including the old electronic version of Applied Computing Review

### **(2) SIGAPP Fund Balances**

The Fund balance has been increasing due to the success of sponsored conferences, including SAC, RACS, and PEARC in receiving generous local support, and the increase in the ACM DL revenue:

<Table 1. Fund Balance>

Year	Amount	Required	Delta	Discretionary
<b>June 2022</b>	\$1,025,481	\$231,610	\$92,713	\$793,872
<b>June 2021</b>	\$932,305	\$70,704	\$74,328	\$861,601
<b>June 2020</b>	\$858,077	\$97,025	\$100,829	\$761,052
<b>June 2019</b>	\$757,248	\$125,974	\$-3,559	\$631,274
<b>June 2019</b>	\$760,807	\$142,526	\$39,802	\$618,281

<Table 2. Digital Lib. Revenue>

Year	Amount
<b>2022</b>	\$51,854
<b>2021</b>	\$42,004
<b>2020</b>	\$40,438
<b>2019</b>	\$60,046
<b>2018</b>	\$50,545

## 2. Efforts related to Diversity, Equality, and Inclusion

To Increase Diversity and Equity of SIGAPP Officers and Organizing Committee members and to foster a sense of community among SIGAPP Officers and Organizing Committee members, SIGAPP tried to recruit volunteers without discrimination against various races and countries. As a result of these efforts, compared to 20~30 years ago where authors of SAC mainly from EU, and USA, we have lots of authors from Asian and African countries now.

## 3. List of Awards and Recipients

Both the SIGAPP Outstanding Service Award and the SIGAPP Distinguished Service Award have been presented almost every year. However, there were no recipient from 2020 to 2022 due to the COVID-19 pandemic.

In 2023, the SIGAPP Distinguished Service Award was presented to Dr. Tei-Wei Kuo from National Taiwan University in recognition and honor of his significant contributions as the Vice Chair of SIGAPP. He has played a crucial role in establishing the SIGAPP China Chapter and SIGAPP Taiwan Chapter. His dedication and efforts in promoting the major sponsored conferences of SIGAPP, namely SAC and RACS, in various Asian countries, including Taiwan and China, have been exceptional.

#### **4. Significant papers on new areas**

There were no special and significant papers on new areas.

#### **5. Sponsored Conference Activity**

Due to the sudden outbreak of COVID-19, the main event within SIGAPP, the Symposium on Applied Computing (SAC), was unable to be held in its ordinary in-person format between 2020 and 2022. However, the organizing committee and authors made efforts to adapt to the situation and preserved the possibility in presenting research works and sharing comments and ideas through an online web platform.

In 2023, the 38th Annual edition of SAC was successfully held in Tallinn, Estonia, and it became another significant event for the Symposium on Applied Computing in the SIGAPP history. This international gathering attracted more than 400 attendees from over 50 different countries. It was hosted by Tallinn University in April 2023. The conference featured 35 accepted tracks, which were selected after careful prescreening based on the success of previous SACs and the inclusion of new and emerging areas. The Call for Papers for these tracks resulted in 738 final paper submissions from 50 different countries. After a blind review process, 175 papers were accepted as regular papers for inclusion in the Conference Proceedings and presentation during the Symposium. It resulted in a final acceptance rate of 23.8% for the overall track. The event also awarded the Best Papers Award to five exceptional papers.

Additionally, the Reliable and Convergent Systems (RACS) conference, which was scheduled to be held in Gdansk, Poland, in August 2023, also faced cancellations in 2021 and 2022 due to the impact of COVID-19. RACS, which started as a SIGAPP in-cooperated conference and a 10% partially sponsored conference of SIGAPP in 2012, has now become SIGAPP's fully sponsored conference since 2019, owing to its successful organization by the steering committee and the organizing committee over the past 11 years. Moreover, SIGAPP has a 50% sponsored conference named Proactive and Experiential in Advanced Research Computing Conference (PEARC), which took place in Portland, Oregon, in July 2023. SIGAPP plans to sponsor SAC, RACS, and PEARC in the coming years.

Additionally, SIGAPP has several In-cooperation conferences, the list of which is provided below:

- IDEAS '23 International Database Engineered Applications Symposium, Crete, Greece, 05/05/23 - 05/05/23
- MEDES '23 The 15th International Conference on Management of Digital EcoSystems, Crete , Greece, 05/05/23 - 05/07/23
- MEDES '22 International Conference on Management of Digital EcoSystems, Venice , Italy, 10/19/22 - 10/21/22
- SBSI '22 XVIII Brazilian Symposium on Information Systems, Curitiba , Brazil, 05/16/22 - 05/19/22
- ICCA '22 International Conference on Computing Advancements, Dhaka , Bangladesh, 03/10/22 - 03/12/22
- MEDES '21 International Conference on Management of Digital EcoSystems, Virtual Event , Tunisia, 11/01/21 - 11/03/21

- BRAINS '21 3rd Conference on Blockchain Research & Applications for Innovative Networks and Services, Paris , France
- SMA '21 The 10th International Conference on Smart Media and Applications, Gusan , Republic of Korea, 09/09/21 - 09/11/21
- SBSI '21 XVII Brazilian Symposium on Information Systems, Uberlândia , Brazil, 06/07/21 - 06/10/21
- ECBS '21 Conference on the Engineering of Computer Based Systems, Novi Sad, Serbia, 05/26/21 - 05/27/21

## **6. Comments on special projects and non-conference program**

### **(1) ACR, newsletter for members and non-members**

ARC, Applied Computing Review is distributed to all ACM/SIGAPP members as benefits of membership, and it is available to non-SIGAPP members, libraries, and other institutions by special subscription.

ACR is now stabilized, and we have begun publishing quarterly electronically since the Spring of 2012. Ultimately, we would like to have ACR appear in the SCI (Science Citation Index). ACR contains invited papers from world-renowned researchers and selected papers presented by prominent researchers and professionals who attended the SAC, RACS, and PEARC. The selected papers have been expanded, revised, and peer-reviewed again for publishing in ACR. The next issue will be published in the fall of 2023. We hope that ACR will serve as a platform for many new and promising ideas in the many fields of applied computing. It is strongly related to nearly every area of computer science, and we feel it as our obligation to serve the community as best as we can. The papers in ACR represent the current applied computing research trends. These authors truly contribute to the state of the art in applied computing.

### **(2) SIGAPP Chapter**

Especially in Far East Asian countries, such as Korea, China, Taiwan, and Hong Kong, there is notable government-level support to applied and convergent computing. As a result, we have established new SIGAPP chapters in these countries, which has led to a significant increase in the number of SIGAPP members through these local chapters. Looking ahead, we are planning to establish SIGAPP Japan to host various academic events in collaboration with the existing six SIGAPP Chapters. Additionally, SIGAPP aims to facilitate joint seminars and small workshops between neighboring SIGAPP chapters (e.g., SIGAPP Korea, SIGAPP China, SIGAPP Taiwan, and SIGAPP Hong Kong), which can provide researchers with opportunities to share their research works locally and across regions.

### **(3) Others**

**Student Grants:** We have implemented the Student Travel Award Program (STAP) to support students who face financial challenges in attending SIGAPP-sponsored conferences. The STAP has been highly successful in assisting SIGAPP student members in participating in conferences sponsored by SIGAPP. Each year, around 40 to 45 students receive awards, and approximately \$40,000 to \$50,000 has been allocated for this purpose. Additionally, we have plans to introduce a Developing Countries Travel Award to support faculty-level researchers from developing

countries, enabling broader geographical participation in the SAC conference. Unfortunately, we were unable to implement this award for SAC 2020 and SAC 2021, which were held as virtual meetings. From 2024, we will expand the Student Travel Award Program (STAP) to provide support for students attending the RACS and PEARC conferences as well.

## **7. Brief Summary of key issues that SIGAPP membership will have to deal with in the next 2~3 years**

Member retention is constant concerns for SIGAPP, and it is even more challenging after COVID-19. Developing a robust renewal strategy is crucial for sustaining revenue and ensuring the long-term ability to serve our members effectively. Neglecting this aspect could risk undermining SIGAPP's financial health and overall member satisfaction. We have identified that the primary reason for members not renewing is a lack of engagement. Therefore, SIGAPP is placing a strong emphasis on improving real engagement as a key element of our membership renewal strategy.

To retain existing members and attract new ones, SIGAPP has implemented a free one-year membership offer for authors who have previously registered for SAC and RACS in recent years. Those authors who receive the complimentary membership can then submit their papers to SAC and RACS the following year at a discounted member's registration fee. By involving these authors, we aim to foster a sense of engagement with SIGAPP.

Furthermore, SIGAPP is continuously enhancing and building our volunteer development process, recognizing its significance for the organization. The Executive Committee actively seeks new volunteers to serve as future SIGAPP officers. We encourage SIGAPP members to volunteer for the SAC conference, which serves as the flagship event of our organization.

Additionally, we are dedicated to creating a career path for young researchers to support their professional growth. This includes initiatives such as the Career Award, Young Researcher Award, and a range of service positions, from Technical Program Committee (TPC) members and Track Chairs to Conference Chairs. These opportunities aim to attract talented individuals to join and collaborate within SIGAPP, fostering a vibrant and engaged community.

**SIGARCH Annual Report**  
**July 2022 – June 2023**  
**Submitted By: Babak Falsafi, Chair**

## **OVERVIEW**

Every year we report on our activities and initiatives along the three pillars in our mission statement – technical exchange, talent development and recognition, and outreach. These three pillars have a strong emphasis on diversity and inclusion with initiatives that have impacted communities across ACM and beyond. This report covers two years of activities because due to an inadvertent error the Annual Reports stating with 2020 covered the prior year. This year's report fixes the error by including both 2022 and 2023. This is also the last annual report with the current SIGARCH EC.

## **TECHNICAL EXCHANGE**

SIGARCH (co-)sponsors a strong portfolio of conferences, many of which co-host a variety of highly attended specialized workshops and tutorials on leading-edge topics. We highlight below two conferences: ISCA, the premier conference for computer architecture (co-sponsored with IEEE-CS TCCA), and ASPLOS, the premier multidisciplinary systems conference that brings together architecture, programming languages, and operating systems (co-sponsored with SIGPLAN and SIGOPS).

(1) ISCA: The 49th ISCA was the first ISCA that came back to a physical meeting after COVID and was held in NYC. The conference featured 13 workshops, 9 tutorials, three keynotes, an industry track session, 22 (two-lane) technical paper sessions (with 400 submitted and 67 accepted papers), and two panels. ISCA 2022 was the second online edition of ISCA with 939 in-person and 231 remote participants and \$158,000 of sponsored funds.

The 50th ISCA was held in Orlando in June 2023 as part of FCRC. The conference featured 20 workshops, six tutorials, five plenary FCRC talks one of which one was given by Margaret Martonosi, a computer architect and the 2021 Eckert-Mauchly Award winner, another by Kunle Olukotun, a computer architect and the 2023 Eckert-Mauchly Award winner, an industry track session, and 14 technical paper sessions (with 372 papers submitted and 79 accepted). The credit for the success of ISCA 2023 also goes to the 704 in-person (and 61 remote) participants from all over the world, and to an equally passionate group of organizers who raised \$121K in industrial sponsorship funds for the conference during this difficult financial year for our industry. With additional funding from SIGARCH, TCCA, and NSF, ISCA'23 provided student travel grant support to 109 students. The conference also provided funds together with SIGARCH and CASA to support a special dinner for all ISCA students to network with PLDI students.

This edition of ISCA marked the 50th anniversary of the conference and also featured a number of events centered around this anniversary. A committee of ISCA 50 organizers put together a 25-year volume of retrospectives (following the tradition

which started with ISCA 25) of 98 papers selected by a peer group of recent ISCA program chairs. The events also included a panel reflecting upon 50 years of ISCA, a set of social media posts with memories contributed from community members of various ISCA's and a speech by Mike Flynn who was the founder of ISCA, SIGARCH and TCCA.

(2) ASPLOS: ASPLOS'22 held in Lausanne, Switzerland was the first conference in our community that came back to in-person from COVID. The conference featured a strong technical program with 80 accepted papers and 397 paper submissions. The program included three keynotes, five workshops, and nine tutorials and had a total of 285 in-person and 212 remote attendees.

ASPLOS'23 was held in Vancouver, Canada. The conference was run for the first time with a multi-deadline review process allowing more time for the authors to decide when to submit their papers throughout the year and an extended window for revision and resubmission. This new process increased the number of submissions by nearly 50% and resulted in a program with 155 accepted papers (128 which appeared in ASPLOS'23 and the rest to be included in ASPLOS'24) and 588 submissions. The program included three keynotes, three workshops, and ten tutorials and had a total of 473 in-person and 53 remote attendees.

## **TALENT DEVELOPMENT & RECOGNITION**

We have a number of awards that are given annually either by ACM/IEEE directly, by SIGARCH alone, or SIGARCH together with TCCA. José Martínez is our Awards Chair and coordinates the Maurice Wilkes and Alan Berenbaum awards. The Dissertation award has an alternating chair between a SIGARCH EC and a TCCA EC member every year. Natalie Enright Jerger coordinates the CACM highlights. The influential paper awards are coordinated by the conference chairs together with the respective steering committees or SIGARCH/TCCA chairs.

(1) ACM/IEEE Eckert-Mauchly award: This is the most prestigious award in our community given for contributions to computer and digital systems architecture. The 2022 recipient was Mark Horowitz for “contributions to microprocessor memory systems.” The 2023 recipient was Kunle Olukotun for “contributions and leadership in the development of parallel systems, especially multicore and multithreaded processors.”

(2) SIGARCH Maurice Wilkes award: This is the most prestigious award given to a researcher in the first 20 years of their career. The 2022 recipient was Moin Qureshi for “contributions to high-performance memory systems.” The 2023 recipient was Abhishek Bhattacharjee for “contributions to memory address translation used in widely available commercial microprocessors and operating systems.”

(3) SIGARCH/TCCA influential ISCA paper award: This award recognizes a paper from the ISCA 15 years earlier. The 2022 recipient was “Power Provisioning for a Warehouse-Sized Computer” by Xiaobo Fan, Wolf-Dietrich Weber and Luiz Andre Barroso. The 2023 recipient was “3D-Stacked Memory Architectures for Multi-Core Processors” by Gabriel Loh.

(4) ASPLOS influential paper award: This award recognizes ASPLOS papers from 10 or more years ago. The 2022 recipients were “Learning from Mistakes: A Comprehensive Study on Real World Concurrency Bug Characteristics” by Shan Lu, Soyeon Park, Eunsoo Seo and Yuanyuan Zhou in ASPLOS 2008, “Rethinking the Library OS from the Top Down” by Donald E. Porter, Silas Boyd-Wickizer, Jon Howell, Reuben Olinsky, Galen C. Hunt in ASPLOS 2011, and “Design and Evaluation of a Compiler Algorithm for Prefetching” by Todd C. Mowry, Monica S. Lam, Anoop Gupta in ASPLOS 1992. The 2023 recipient was “Clearing the Clouds: a study of emerging scale-out workloads on modern hardware” by Michael Feldman, Almutaz Adileh, Onur Kocberber, Stavros Volos, Mohammad Alisafae, Djordje Jevdjic, Cansu Kaynak, Adrian Daniel Popescu, Anastasia Ailamaki, Babak Falsafi in ASPLOS 2012.

(5) SIGARCH Alan D. Berenbaum Distinguished Service Award: This award is presented annually to an individual who has contributed important service to the computer architecture community. The 2022 recipient was Kathryn McKinley for “elevating awareness and mitigating harassment and discriminatory behavior, and for advancing best practices to improve diversity, equity, and inclusion in our computer architecture and broader computing communities.” The 2023 recipient was David Wood for “his exemplary stewardship of the SIGARCH-SIGHPC transition and his decades of leadership in the SIGARCH and broader computer architecture community.”

(6) SIGARCH/TCCA Outstanding Dissertation Award: This award is presented annually to recognize excellent thesis research by doctoral candidates in the field of computer architecture.

The 2022 recipient was Prakash Murali from Princeton (advised by Margaret Martonosi) for “Enabling Practical Quantum Computation: Compiler and Architecture Techniques for Bridging the Algorithms-to-Devices Resource Gap.” The award citation was “for cross-layer computer architecture and compilation techniques that facilitate practical quantum hardware and software, bridging the resource gap between quantum applications and hardware.” Honorable Mentions went to Akshitha Sriraman from University of Michigan (advised by Thomas Wench) for “Enabling Hyperscale Web Services” with the award citation “for contributions enhancing the efficiency and scalability of hardware and software architecture for hyperscale datacenter systems.”

The 2023 recipient was Georgios Tzimpragos from UCSB (advised by Timothy Sherwood) for his dissertation entitled “Computing with Temporal Operators.” The award citation was “for temporal logic architectures with applications to in-sensor computation and superconducting electronics.”

Honorable Mentions went to Vidushi Dadu from UCLA (advised by Tony Nowatzki) for “Generalizing Programmable Accelerators for Irregularity” with the award citation “for broadening the scope of programmable accelerators by systematizing forms of irregularity across domains and exposing specialization primitives within unified task-dataflow execution models”, Udit Gupta from Harvard (advised by David Brooks and Gu-Yeon Wei) for “Enabling High Performance, Efficient, and Sustainable Deep

Learning Systems at Scale” with the award citation “for contributions to hardware/software design of neural recommendation systems, recognition of the sustainability impact of large-scale AI, and development of embodied carbon models” and Gururaj Saileshwar from Georgia Tech (advised by Moin Qureshi) for “Architecting Secure Processor Caches” with the award citation “for developing principled state-of-the art cache attacks and defenses by exploiting architectural insights.”

(7) CACM Research Highlights: SIGARCH has a four-member standing committee to nominate papers for CACM Research Highlights. The candidate papers are solicited through a survey of conference attendees as well as nominations by Program Chairs of the most prestigious conferences sponsored by SIGARCH. These candidates are then forwarded to the CACM Editorial Board to make the final decision. The nominated papers are also listed on our website to reflect the high prestige of the papers being selected. Last year, the papers nominated were “Neural Architecture Search for Program Transformation Exploration” by Jack Turner, Elliot J. Crowley, Michael O’Boyle from ASPLOS’21, “Computing with Time: Microarchitectural Weird Machines”, by Dimtry Evtushkin, Thomas Benjamin, Jesse Elwell, Jeffrey Eitel, Angelo Sapello, Abhrajit Ghosh from ASPLOS’21, “Ten Lessons From Three Generations Shaped Google’s TPUv4i” by Norman Jouppi, Doe Hyun Yoon, Matthew Ashcraft, Mark Gottscho, Thomas Jablin, George Kurian, James Laudon, Sheng Li, Peter Ma, Xiaoyu Ma, Thomas Norrie, Nishant Patil, Sushma Prasad, Cliff Young, Zongwei Zhou, David Patterson from ISCA’21, and “Compiler-Driven FPGA Virtualization with SYNERGY” by Joshua Landgraf, Tiffany Yang, Will Lin, Christopher Rossbach, Eric Schkufza from ASPLOS’21.

The papers nominated in 2023 are “TMO: Transparent Memory Offloading in Datacenters” by Johannes Weiner, Niket Agarwal, Dan Schatzberg, Leon Yang, Hao Wang, Blaise Sanouillet, Bikash Sharma, Tejun Heo, Mayank Jain, Chunqiang Tang, Dimitrios Skarlatos from ASPLOS 2022, “SRAM Has No Chill: Exploiting Power Domain Separate to Steal On-Chip Secrets” by Jubayer Mahmud, Matthew Hicks from ASPLOS 2022 and “NvMR: Non-Volatile Memory Renaming for Intermittent Computing” by Abhishek Bhattacharyya, Abhijith Somashekhar, Joshua San Miguel from ISCA 2022.

(8) Honoring retirees: Jointly with TCCA, we launched a program in 2017 to honor at ISCA the contributions of members of our community who are retiring or have recently retired. We did not have any announced retirees in 2023 or 2022.

(9) Remembering recently departed members: With TCCA, we also launched a program at ISCA in 2017 to remember members of our community who have passed away. At ISCA’22, we mourned the passing of Davide Giri, a PhD student at Columbia University with a tribute from his colleague Joseph Zuckerman, and Amirhossein Mirhosseini, a PhD alumnus from the University of Michigan with a tribute from his advisor Tom Wenisch. At ISCA’23, we mourned the passing of three pioneers in computing, Michel Dubois, Professor at University of Southern California, William Wulf, Professor of Computer Science at University of Virginia, and Fred Brooks Jr., Professor of Computer Science at University of North Carolina. Per Stenström, Kevin Skadron and Dave Patterson gave tribute.

(10) Student mentoring: Joel Emer has been running the “Meet a Senior Architect (MASA)” together with “Meet a Senior Student (MASS)” launched by CASA at our conferences. The programs match students with mentors (through questions asked in the conference registration form), providing students the opportunity to meet 1-on-1 with a senior architect or a senior student for about half an hour at the conference. These programs ran virtually during COVID. Mentorship is now codified at ISCA, ASPLOS and MICRO as a service with an assigned chair on the conference organizing committee and guidelines about how to run the mentorship programs. These programs collectively boast several hundreds of mentees and mentors in our conferences. As of 2022, CASA has launched an online mentorship platform called CALM which offers services beyond conferences and meeting events.

(11) Women In Computer Architecture (WICArch): WICArch was created in 2018 as part of SIGARCH to build a community of female architects, celebrate their accomplishments, and boost talent development for women in architecture. WICArch is currently chaired by Kelly Shaw with a portfolio of activities including an annual flyer showcasing women graduates in the academic market, virtual seminars, reading groups, industry engagement and conference meetups.

(12) Computer Architecture Student Association (CASA): CASA is an independent student-run organization with the express purpose of developing and fostering a positive and inviting student community within computer architecture. CASA is now run by a steering committee of 13 members. SIGARCH has been co-sponsoring CASA together with IEEE TCCA with funds for activities aligned with its mission. SIGARCH also hosts CASA on the sigarch.org website. We have funded CASA for hosting balanced mental health seminars for graduate students and networking events including a joint dinner for ISCA with PLDI students at FCRC’23.

## **OUTREACH**

Boris Grot leads the communication team with Akanksha Jain as the content editor (for the website, announcements, and the newsletter), Adrian Sampson remains the social media editor and Jayneel Gandhi as the video editor in charge of the SIGARCH YouTube! channel. The YouTube! channel has continued to serve as a platform to host all recordings for the virtual/hybrid conferences, starting with ASPLOS’20.

(1) Computer Architecture Podcasts: The Computer Architecture Podcasts run by Lisa Hsu and Suvinay Subramanian as the editors interviews leading figures in the architecture community about cutting-edge topics in architecture, their vision, and career experiences. The podcasts are available in standard formats and are hosted at comparchpodcast.podbean.com. In 2022 and 2023 the podcasts enjoyed 7500 and 11600 downloads respectively, a 50% increase year after year.

(2) Computer Architecture Today (CAT): In 2022, CAT continued serving as a successful platform for our community members and those in related fields to discuss diverse topics of interest, thanks to its blog editor, Rajeev Balasubramonian, with the help of the associate blog editor, Christian Delimetro. In 2023, Brandon

Lucia took over as the blog editor. We thank Rajeev for his outstanding service. CAT boasts over 40 blogs a year and a few hundred thousands of views.

## **GRANTS & SUPPORT PROGRAMS**

We have a number of grants and support programs that are coordinated and managed by our Treasurer, Karin Strauss. These include:

(1) Talent development grants: We have launched financial support for initiatives aimed at developing talent, improving well-being, and advancing diversity and inclusion for the computer architecture community. The Undergrad Architecture Mentoring Workshop (Uarch) targets boosting participation from undergrads in parts of the world and institutions with lower average participation at computer architecture conferences. In 2022 and 2023, the workshop was held at ISCA with 2022 having hosted 31 students in person and over 50 students virtually. In 2023, the selected candidates represented 14 countries, and 29 schools with 45% of students coming from outside North America, including students from Ethiopia, Nigeria, Uruguay, and Costa Rica to name a few, 45% of students being women, and 53% coming from schools that do not have a strong Computer Architecture program.

(2) Student travel grants: Student travel grants for conferences are among our flagship benefits for student members. All conferences where SIGARCH co-sponsors at a level greater than 33% are eligible for student travel grant support at levels of \$5K-\$20K. Survey results in 2016 indicated that 39% of the respondents said they would come to ISCA only if they received some travel grant and 5% of the students used personal funds to cover the difference between actual costs and these travel grants. In 2022 and 2023, we continued supporting our student members through the travel grants at sponsored conferences.

(3) Diversity and inclusion grants: SIGARCH provides financial support for a number of initiatives aimed at developing talent, improving well-being, and advancing diversity and inclusion for our members at various levels of seniority at SIGARCH-sponsored events. In 2022 and 2023, we financially sponsored CASA's Mental Health events and networking dinner with PLDI students, the Undergrad Architecture Mentoring Workshop (Uarch), Young Architect Workshop (Yarch), and the grad cohort of CRA Committee on Widening Participation in Computing Research (CRA-WP).

(4) Companion assistance and childcare grants: SIGARCH was a pioneer in supporting travel grants for companions for childcare or disability support for those attending professional meetings while traveling. These have expanded to supporting on-site childcare in recent years.

## **GUIDELINES & RESOURCES FOR ORGANIZERS**

With the tragic passing of a student member in our community in 2019 and the subsequent revelations of professional misconduct in our community, we have launched a number of initiatives to help improve our community's health and restore confidence in our processes. These initiatives include extending CARES' mandate to cover aid with reporting violations of publication and review policies and code of

ethics, announcing clear ethics guidelines to all program committee members at ISCA and ASPLOS, and tightening security and activity tracking in HotCRP. In collaboration with TCCA, and under Martha Kim's leadership we have outlined, created and maintained "packets" for Program Chairs and General Chairs, best practices for conference reviewing and best practices for program chairs (with Boris and José collaborating with Daniel Jiménez and Moin Qureshi of TCCA). Martha has also created and maintained a document outlining guidelines for SIGARCH sponsored conferences that include high standards for review processes, well-articulated processes for the creation and maintenance of a steering committee and a commitment to diversity and inclusion from organizers.

We have also outlined a number of questions in a Computer Architecture Today blog in 2021 about ACM's processes and policies for professional misconduct. We are glad to see that ACM is taking steps in addressing some of these concerns, and that other SIGs are following a few of our guidelines for conference organizers to vet team members against ACM's sanctions database.

(1) ConflictDB: In 2020, we launched the development of ConflictDB that enables tracking both DBLP-crawled and self-declared conflicts (through two-way confirmation) for use by the community across multiple computer architecture conferences. We have finished the development and will pilot the platform with ISCA'24. We are also in touch with ACM to make this platform available to other SIGs.

(2) MASA/MASS guidelines: Gururaj Saileshwar, the MICRO'20 and ASPLOS'21 MASS/MASA chair has put together a document of best practices recommended for MASA/MASS chairs. The document outlines the timeline for setting up MASS/MASA events based on the process which was followed for ASPLOS'21.

(3) Travel grants guidelines: Dimitrios Skarlatos, the ASPLOS'23 travel grants chair has put together a document of best practices recommended for the ISCA Travel Grant Chair. The primary purpose of this document is to provide guidance to future Travel Grant Chairs as they engage in fund-raising, assigning funds to students, and perform reimbursement and reporting.

## **SUMMARY**

SIGARCH remains a financially healthy and vibrant organization while increasing the scope of its initiatives to sponsor activities for technical exchange, talent development, and recognition, outreach, and grants/support programs with a strong emphasis on diversity and inclusion. It takes a village to launch and deliver on these initiatives. We would not be able to realize our vision without the dedication of a large number of volunteers in various committees. We gratefully acknowledge the ACM staff, notably our liaisons J. C. Peebles (until 2023) and Katie Balben (from 2023 onwards), for their support and for graciously handling the increased workload.

**ACM SIGBED Annual Report  
2022-2023  
Submitted By: Steve Liu, Chair**

ACM SIGBED has been transitioning from the covid time to the post-covid time. This year, we have made many adaptations and several new initiatives along this change. We actively organized and sponsored multiple activities and conferences for the real-time, embedded, and cyber-physical systems communities. Below are the main highlights during the reporting period reflecting that SIGBED is a very active, healthy, and viable organization.

### **SIGBED Leadership**

The selected SIGBED leaders for the current term are:

Steve Liu (Chair), Sayan Mitra (Vice Chair), and Wanli Chang (Secretary-Treasurer).

Board of Directors:

Jim Anderson (Past SIGBED Chair), Samarjit Chakraborty, Farinaz Koushanfar, Insup Lee, Jie Liu, Martina Maggio, Niki Trigoni, Wang Yi.

Three out of the eight members of the Board are female.

Other Executive Committee Members:

Tei-Wei Kuo, Stanley Bak, Chuchu Fan, Song Han, Chenren Xu, Fanxin Kong, Kyoseung Kim, Yuan-Hao Chang

### **Diversity, Equity, and Inclusion**

SIGBED currently has about 10% of our members being women. Three of the eight SIGBED Board members are women. We are eager to improve the representation and engagement of women and other minorities at every level in our community.

As a first initiative, SIGBED this year started to co-sponsor the CPS Rising Stars Workshop organized by the University of Virginia (2023). This Second Annual CPS Rising Stars Workshop was held on May 31, 2023. Wanli Chang represented SIGBED and delivered a Welcome address. Thirty-four Rising Stars were selected from a competitive applicant pool of 117. The workshop also exceeded its aim to increase representation and diversity in CPS with over 70% of the Rising Stars being women or from other underrepresented groups. The CPS Rising Stars Workshop provided Ph.D. students and postdocs with critical information to be successful in the next steps of their careers, including insight into the academic search process, obtaining research grants, and establishing research groups and collaborations. The workshop also provided an opportunity to create connections and networks with other rising leaders in CPS which they will be able to leverage in their future research and careers. A detailed report of this event can be found on our website as a blog:

<https://sigbed.org/2023/06/09/2023-annual-cps-rising-stars-workshop-trip-report/>

Please see the CPS Rising Stars Workshop website for additional information and details on the 2023 Rising Stars: <https://risingstars.linklab.virginia.edu/2023/>.

In 2023, SIGBED initiated the ACM SIGBED Undergraduate Scholar Program, which sponsors outstanding undergraduate students who are broadly interested in embedded systems to attend leading conferences in the field. Six students across Asia, Europe, and North America have been selected with four being female. They are provided full financial support to attend ESWEEK 2023.

SIGBED will continue to improve the representation and engagement of women and other minorities.

## **List of Awards**

SIGBED offers several awards to recognize outstanding members or work by members of the community. Details and most up-to-date information about the awards, selection processes, and nomination deadlines can be found on SIGBED's awards page (<https://sigbed.org/awards/>).

The Paul Caspi Memorial Dissertation Award is a SIGBED award established in 2013. The award recognizes outstanding doctoral dissertations that significantly advance the state of the art in the science of embedded systems, in the spirit and legacy of Dr. Paul Caspi's work. The 2022 Award Selection Committee was formed with Prof. Wanli Chang as the Award Chair, with 6 other award committee members who are all respected researchers with diverse technical backgrounds in the field. We received 8 nominations and the award committee independently evaluated all nominated dissertations. The award was given to Tanya Amert from the University of North Carolina at Chapel Hill, for her thesis "Enabling Real-Time Certification of Autonomous Driving Applications". In 2023, we received 9 nominations and the selection is ongoing. All dissertations are being carefully reviewed and feedback will be provided to the candidates.

The SIGBED Early Career Award was established in 2017. The award recognizes outstanding contributions by early career investigators in embedded, real-time, and cyber-physical systems. The 2022 Award Selection Committee was formed with Prof. Tei-Wei Kuo as the Award Chair, with 5 other award committee members who are all respected seniors in the field. We received 7 nominations for the Early Career Researcher Award. Each candidate was discussed fully by the Award committee. The final decision for the selection of SIGBED Early Career Researcher Award 2022 was given to Marco Zimmerling from the University of Freiburg, Germany. In 2023, the Award Selection Committee Chair is Prof. Tulika Mitra. There were 5 nominations and the award was presented to Zhishan Guo from North Carolina State University, USA in CPS-IoT Week 2023.

The SIGBED-SIGSOFT Frank Anger Memorial Award is a student award in the name of the late Dr. Frank Anger to promote cross-disciplinary research between embedded systems and software engineering. SIGBED solicits applications from qualified student members who have published a paper at a SIGBED-sponsored conference in the current or previous year. The submission deadline is usually at the end of August. The Award Selection Committee in 2022 is chaired by Nan Guan. We received 7 nominations. All the applicants have excellent research records in embedded systems, and proposed exciting research topics crossing over embedded systems and software engineering. After a two-round selection process, finally, the selection committee decided to grant the award to Claudio Mandrioli from Lund University, Sweden.

SIGBED has created two new senior awards last year, i.e. SIGBED Technical Achievement Award, and SIGBED Distinguished Leadership Award, pending official approval from ACM.

The SIGBED Technical Achievement Award is to recognize significant and sustained contributions to research and/or system implementations relevant to SIGBED. The award is based on the impacts of the research and/or system implementations made by the awardee throughout their lifetime.

The SIGBED Distinguished Leadership Award is to recognize individuals who have exemplary and substantive leadership in leading and implementing activities over the communities relevant to SIGBED, at regional, national, and/or international levels.

Both senior awards are handled by the Award Selection Committee, which is chaired by Prof. Tei-Wei Kuo.

### **List significant papers on new areas that were published in proceedings**

The research activities in SIGBED-sponsored events continue to be vibrant and robust. Many of the conferences listed above recognize significant contributions with the distinguished paper awards. Previously, SIGBED also established a process and a subcommittee for nominating papers from this pool to appear in CACM's research highlights section. As a sampling of the strongest contributions, here we list the three papers that have been nominated for CACM RH for 2022.

Yong Kiam Tan, Stefan Mitsch, André Platzer: *Verifying Switched System Stability With Logic*. Appeared in the proceedings of HSCC 2022: 2:1-2:11.

Jialu Bao, Nitesh Trivedi, Drashti Pathak, Justin Hsu, Subhajit Roy: *Data-Driven Invariant Learning for Probabilistic Programs*. Appeared in the proceedings of CAV 2022, 33-54.

Bingyao Wang and Margo I. Seltzer: *Tinkertoy: Build Your Own Operating Systems for IoT Devices*. Appeared in the proceedings of EMSOFT 2022 and IEEE Trans. Comput. Aided Des. Integr. Circuits Syst. 41(11): 4028-4039 (2022)

### **Conference Activities**

SIGBED is currently sponsoring the following conferences: Three ESWEEK conferences (CASES, CODES+ISSS, EMSOFT) and two symposia (MEMOCODE and NOCS); five CPS-IoT Week conferences (ICCPS, HSCC, RTAS, IPSN, and IoTDI); and three other conferences, namely, Chase, LCTES, and SENSYS.

### **Student Grants and Competitions**

To promote excellence in embedded systems education and research, SIGBED offers travel grants for students to attend ESWEEK and CPS-IoT Week, the premier forums in the areas of embedded and cyber-physical system design. The travel grants can be used to partially cover conference registration and/or hotel accommodation. The SIGBED

leadership views travel grants as one of the best investments into the SIG future and the budget allocation for travel grants has increased yearly.

In 2023, USD 40k was passed to CPS-IoT Week and ESWEEK in total. For CPS-IoT Week, five students were awarded from each of the five conferences, each student with USD 800. ESWEEK 2023 is ongoing.

We plan to continue to provide student travel grants to support students to attend conferences in the field.

We are holding the ACM SIGBED Student Research Competition in ESWEEK 2023. There were 15 submissions. SIGBED is investing in prizes, travel grants, and relevant activities, to attract participants. Champions from SIGBED in 2022 participated in the ACM Grand Finals and Prof. Wanli Chang was invited to join the judging panel.

SIGBED has also initiated the ACM SIGBED Undergraduate Scholar Program, which has been included in the previous DEI section.

### **SIGBED Business Meeting**

The First SIGBED Business Meeting in this year was held in conjunction with the ESWeek 2022. It was held virtually on Friday, October 14th 9-11 am Central Time (10am-12pm Eastern Time, 2-4pm UTC). ESWeek 2022 was a hybrid event, with the on-site component in Shanghai, China. Due to the travel restrictions, most attendees outside China attended remotely. We used Gathertown for this meeting. In this meeting, we reported the major activities, new initiatives, and announce the inaugurals of two new senior SIGBED awards.

The second SIGBED Business meeting this year was held on May 10, 2023, in conjunction with the CPS-IoT Week 2023. Steve Liu was at the CPS-IoT Week 2023 in San Antonio to represent SIGBED and hold the meeting in person. To facilitate people who cannot attend physically, we also provided the online meeting option. During the meeting, we presented and discussed the SIGBED background and history, membership status, the reasons and benefits of joining SIGBED and ACM, the SIGBED leadership, conferences, awards, student competitions ACM SIGBED SRC, the newly launched SIGBED Cross-Sig Activities, SIGBED blog, recap of SIGBED Business Meeting Fall 2022, updates on DEI Activities, plans, and discussions.

### **SIGBED Website and Blog**

The SIGBED website has been constantly updated with fresh content, and it has become a useful source of references for the awards and events sponsored by SIGBED. The website is available at <https://sigbed.org/>.

SIGBED blog has attracted many contributions by highly active researchers that reflect cutting-edge work and new events on embedded systems being done today. Since August 2022, the SIGBED blog has published twelve high-quality articles on a variety of topics, up 50% of the total published blogs. Among them, "The Toxic Culture of Rejection in Computer Science" written by Prof. Edward Lee, has been very widely viewed and generated a lot of

discussions in the SIGBED community and beyond. Up to 2023-07-23, this blog has been viewed 109,546 times. Please see <https://sigbed.org/blog/> for more details.

## **SIGBED Cross-Sig Activities**

SIGBED started a new initiative, called SIGBED Croo-Sig Activities. It aims to collaborate with closely related ACM SIGs to organize events that will benefit the members of SIGBEDs and other SIGs. In this way, we can promote interdisciplinary collaborations, knowledge sharing, and transfer, and spark new ideas. We are happy to launch the first cross-sig event, i.e. SIGBED x SIGDA Workshop on Emerging Techniques in System Design and Design Automation for Embedded Systems, which was co-located with ESWeek'22. It was co-organized by Dr. Chenren Xu, the Cross-SIG Activities Director of ACM SIGBED. The event has four talks and a panel covering EDA tools, ML in EDA, and cross-layer embedded design. There were 100+ audience (hybrid).

In 2023, we plan to launch the 1st (SIGBED x SIGMOBILE) Workshop on Satellite Networking and Computing (SatCom). It focuses on frontier embedded topics in the intersection of satellite comm, net, and embedded computing. It will be co-located with ACM MobiCom'23.

## **The SIGBED Distinguished Speakers Program**

As another new initiative, SIGBED this year launched the new initiative – SIGBED Distinguished Lecture Series. It is a prestigious program that brings renowned experts in the field of embedded computing systems and cyber-physical systems to deliver engaging and insightful talks in a regular manner. The series aims to foster intellectual exchange, promote cutting-edge research, and inspire the next generation of innovators and scholars.

These distinguished speakers, often leaders in their respective areas, share their expertise, research findings, and visionary ideas, covering a wide range of topics. The SIGBED Distinguished Lecture Series serves as a platform for knowledge dissemination, encouraging collaboration, and driving advancements in embedded systems, including both software and hardware.

For the inaugural speech, we are pleased that Prof. Edward A. Lee from UC Berkeley gave the speech titled “Deterministic Concurrency in Cyber-Physical Systems”. The lecture took place on June 15th, 2023 (Thursday) at 11:00 am EST. Steve Liu gave the opening speech and introduction of the speaker. Song Han hosted the meeting. Over 150 people attended the lecture.

The next speech is scheduled to be held on September 2023.

## **Issues**

On the one hand, SIGBED does not have a flagship conference of its own, and on the other hand Machine Learning (ML) has shifted the technology landscape of embedded and cyber-physical systems. SIGBED-supported publications and events are undergoing rapid changes and new workshops are being created to address these shifts. A thoughtful

integration of the various SIGBED journals and conferences to realign the community's interests and expertise might be an achievable and important goal.

**SIGCAS Annual Report**  
**July 1, 2022 to June 30, 2023**  
**Submitted By: Michelle Trim**

**1. Comment on the ways in which the SIG is a healthy and viable organization**

I'm happy to report that SIGCAS continues to be in a healthy state. Our finances are such that we are now in a position to consider substantial projects. We are taking care of the SIG obligations on a timely basis. And our communication with members via newsletters, announcements, and social media is regular.

One sign of SIG health is our growing pool of volunteers. In the past virtually all SIG responsibilities were handled by her EC. Our volunteer pool, which still needs significant growth, is now deep enough to field a nomination committee (SIGCAS held elections this past spring), and an awards committee. This past year saw the successful continuation of existing SIG programs. These include

- Timely publication of "Computers and Society." While classified as an ACM Newsletter, the quality of scholarship is more akin to an ACM magazine.
- Active twitter account, listserv, and now a Discord server; which has quickly become the most active of our social media outlets.

**2. Describe your efforts related to Diversity, Equity, and Inclusion**

As described in last year's annual report, the SIG held a membership survey in 2020 and contracted with a consultant (DEI-specialist) in 2021. The EC received the consultant's report in Feb of 2022. The report outlined three types of recommendations: short-term, medium-term, and long-term. While some of the short-term recommendations were immediately implemented (increasing representation in the newsletter) the EC did set aside time for very intentional conversations regarding long-term recommendations; particularly as they related to our non-academic membership. As of this date, none of the recommendations have been operationalized.

A new EC was constituted as of July 1. The new EC is as committed to continuing with the efforts began by the previous EC in this domain and will, once it has found its footing, read the consultant's report and endeavor to implement some of its recommendations.

**3. Awards and recipients**

SIGCAS currently gives two awards annually. The Making a Difference award is presented to an individual who is nationally or internationally recognized for promoting awareness of ethical and social impact issues related to computing and for providing leadership that encourages responsible action on the part of computer professionals. In 2022, this award was presented to Lisa Milenkovic who is the STEM+Computer Science Curriculum Supervisor at Broward County Public Schools, the nation's sixth largest district.

The Outstanding Service award is generally presented to a SIGCAS member who merits recognition for outstanding service in carrying out work that fosters SIGCAS' well-being, vibrancy, visibility and currency. In 2022, the award was presented to Flo Appel. Flo, a well-known figure in the ACM and SIG circles was one of the stalwart SIGCAS members who kept the SIG afloat during some of its darker (viability-wise) days.

#### **4. Significant papers on new areas that were published in proceedings**

SIGCAS sponsors two conferences: COMPASS and GoodIT. Neither conference singles out "best papers." In the future, SIGCAS could work with the organizers of these conferences to develop criteria or a process for identifying these. SIGCAS Annual Report – 2022-2023

#### **5. Conference activity**

This past year saw our second instantiation of what is becoming the SIG's flagship event: the SIGCAS Showcase. At this free, virtual event we present our two awards and hold panel presentations. The showcase is held over two days; each one being a half-day event. The full program can be seen at: <https://www.sigcas.org/events/sigcas-showcase-2022/> ACM Compass is an annual conference focusing on sustainability. The 2022 conference was held on the Univ. of Washington campus. In 2022 COMPASS invited SIGCHI as a partner sponsoring SIG. The 2022 conference's success has inspired the conference leadership to opt for an international location for 2023 - Capetown, South Africa. GoodIT is a primarily European conference focusing on computing for the social good. The 2022 conference (Larnaka, Cyprus) also saw a larger than anticipated attendance. I have learned that for 2023 (Lison, Portugal) preregistration has exceeded 100 attendees! 2022 (and 2023) saw the continuation of SIGCAS's possibly longest running conference activity: an affiliated event held the day prior to the annual SIGCSE Technical Symposium on Computer Science Education. SIGCAS is the home for a variety of "communities" (e.g. Sustainability - COMPASS). Two such communities are Computing for the Social Good in CS Education (CSG-Ed) and Humanitarian and Free Open Source Software in CS Education (HFOSS). This year (Spring 2023), the SIGCAS event was ran by the CSG-Ed group who focused on the important issue of mentoring. SIGCAS was also, again, offered a "sister track" at this event as well.

#### **6. Comment on special projects and non-conference programs that provided service**

Began in 2021, and continuing throughout 2022 and into 2023, was the Works in Program (virtual) program. Each month a different presenter explores some aspect of the rather wide sphere of computers and society. As mentioned above HFOSS and CSG-Ed both continue to hold programs that grow and mature their respective communities. These include periodic meet ups and in conjunction with the CS2023 curriculum report, explicatory articles describing best curricular and pedagogic practices in these two areas. SIGCAS is also proud to have three of its members on the CS2023 steering committee; one of whom is chairing the "Society, Ethics, and Professionalism" subcommittee.

#### **7. Brief summary of key issues that SIG membership will have to deal with in the next 2-3 years.**

There are significant SIGCAS issues surfacing ever more frequently. From the growing adoption of generative AI to the recognition that CS education must include significantly greater focus on ethical analysis - SIGCAS should be at the center. However, it is not clear the SIG is well positioned to meet this increased demand. A new EC was installed this past July, and as discussed above, increasing the volunteer pool is a vital need. If SIGCAS does not grow to respond to these challenges, other voices will fill in the gap. As we move into

the future, there are many unanswered questions: first and foremost is what services, beyond what is currently being provided, do the SIGCAS membership (ACM membership) desire when navigating the computers and society landscape? Maybe more relevant, what services might SIGCAS provide that will attract current (and new) ACM members to SIGCAS? Parallel to this is how can SIGCAS provide value to underrepresented communities within the ACM in particular and the wider computing community in general.

**ACM SIGCOMM Annual Report**  
**Period covered: July 1, 2022 to June 30, 2023**  
**Prepared by Ellen Zegura, Chair of SIGCOMM**

## **SIG ORGANIZATION HEALTH AND VIABILITY**

SIGCOMM is ACM's professional forum for the discussion of topics in the field of communications and computer networks, including technical design and engineering, regulation and operations, and the social implications of computer networking. SIG members are particularly interested in the systems engineering and architectural questions of communications.

SIGCOMM continues to be a thriving organization serving a broad community of researchers from both academia and industry interested in all aspects of computer networking. We sponsor several successful, single-track, high-impact conferences, several of them in cooperation with other SIGs. In this past year, we saw a steady and vibrant return to in person conferences, a welcome chance to reconnect with colleagues and engage in conversations that are difficult to replicate by video conference. As one measure of vitality, the recent SIGCOMM conference in August 2022 had 544 registrants.

There are several highlights to report from the past year.

### **DIVERSITY, EQUITY, AND INCLUSION (DEI) –**

We continued to share and discuss the survey results with our community. More specifically, we arranged a DEI booth and presented the survey in the community meeting at Sigcomm 2022, where we solicited community feedback on various plans for improving DEI at Sigcomm.

The SIG continued to support regional conferences in under-represented regions. Last year, we supported the 15th International Conference on COMMunication Systems & NETWORKS (COMSNETS), which was held in Bengaluru, India. COMSNETS targets audiences from the Indian sub-continent. The last edition was a resounding success with 352 participants, of which 24% were females. Also about one third of the audience were students that came from 16 different institutions in India. We have also supported the 17th Asian Internet Engineering Conference (AINTEC 2022), which was held in Hiroshima, Japan in December 2022. The conference featured 23 papers and posters that were mostly from the Asia-Pacific region and touched upon issues of regional and global interests.

Motivated by the impressive growth in the Southeastern Asian community, we are partnering with them on four initiatives. First, we are organizing three remote pods in Indonesia, Thailand and Vietnam to allow the community members to follow and participate in Sigcomm 2023. Second, we have committed to support the upcoming AINTEC 2023, which will be held in Vietnam, with 15 travel grants to seed further the growth of the local community. Third, we are helping the local community launching a regional forum akin to the Networking Channel. Finally, AINTEC 2024 will be held in conjunction with Sigcomm 2024 in Sydney where we have committed to provide 15 student travel grants as well as supporting five of the organizers. We believe that these efforts will help create both a

vibrant regional community and include the largely under-represented Southeast Asian community.

We continued to support geo-diversity travel awards, though few travel grant applications that fall into this category. We are currently working on addressing some financial barriers that make it harder for candidates to accept the award. For example, the need for covering the entire cost before reimbursement. Here, we are exploring awarding eligible candidates scholarships to facilitate their attendance. We plan also to roll out a scheme that automatically awards candidates that submitted their work to the respective conference.

The SIG has continued to support the efforts of N2Women. An N2Women workshop was held in person at SIGCOMM 2022 and featured a keynote by Renata Teixeira, a panel including Anja Feldmann, a Director at the Max Planck Institute for Informatics, Keith Winstein, Associate Professor at Stanford University, Staff Software Engineer at Google, Mojgan Ghasemi, and Assistant Professor at University of Twente Suzan Bayhan and Xia Zhou, Associate Professor at Dartmouth College and ACM SIGMOBILE 2019 Rockstar, and structured mentoring.

The CARES Committee to aid discrimination and harassment policy violations underwent membership changes and an increase in scope (per ACM request). The current committee is co-chaired by Ethan Katz-Bassett (Columbia University) and Shir Landau Feibish (Open University of Israel). Additional members are Justine Sherry (CMU), and Sujata Banerjee (VMWare). The committee aims for in person representation at each SIG sponsored conference and workshop; committee members are also reachable by email at any time.

## **AWARDS AND RECIPIENTS**

SIGCOMM makes five awards each year.

The Dissertation Award winner was Kevin Bock (Ph.D. from U. Maryland). Siva Kakarla (Ph.D. from UCLA) was the runner up.

The Rising Star Award winner was Manya Ghobadi (MIT), “*outstanding research contributions, early in her career, in developing novel architectures for reconfigurable fiber optical networks and improving machine learning applications with reconfigurable and programmable networks.*”

The Lifetime Achievement Award went to Dina Katabi (MIT) “*for contributions to the design, control, and innovative uses of wireless and networked systems.*”

The Test of Time Award was given to “B4: Experience with a Globally-Deployed Software-Defined WAN” from Google. The award citation is as follows: “*This was an experience paper that seeded a new wave of academic and industrial works on innovative, operational, and large-scale programmable network deployments.*”

Finally, the ACM SIGCOMM Networked Systems Award had no winner this year as the nominations received were not deemed strong enough.

## **CONFERENCE ACTIVITY**

The SIG sponsors an eponymous flagship conference and is the sole sponsor of the following conferences: CoNEXT, Information-Centric Networking (ICN), and the HotNets Workshop. The SIG also co-sponsors the following conferences: Internet Measurement Conference (IMC), SenSys, ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), Symposium on SDN Research (SOSR), and ANRW, the joint ACM, ISOC, IRTF Applied Networking Research Workshop. In addition to conferences we sponsor or co-sponsor, we are in-cooperation with a number of events.

This past year saw a continuing shift from all-virtual and hybrid meetings to in person events, except for program committee meetings, where we are strongly encouraging that virtual meetings be retained to reduce carbon footprint and make it easier for some participants to take part. We recognize that virtual PC meetings may also have disadvantages over in person meetings.

Over the past few months, the SIG has launched an initiative to study and improve upon the structure of our conferences. The pandemic forced us to experiment -- conferences moved online, and organizers had to rapidly prototype and test highly innovative and experimental approaches, from online broadcasting of talks to use of video game-based tools like gather.town. During this process, we learned a number of things. While some of these efforts had a debatable success, we as a community came away with certain lasting mechanisms (e.g., use of slack to encourage questions, pre-recording of talks, shortening of talks) that improved our conferences. More importantly, the pandemic (we believe) has made our community more comfortable with change, and has presented an opportunity for us to sustain this momentum to make further, more significant, and broader improvements that support students, minority groups, and our community as a whole, with a more principled approach.

In an effort to sustain this momentum, the SIG has been leading an initiative around redesigning our conferences. The SIG formed a Conferences Revisited Committee (CRC), tasked with collecting information on our conferences, determining their shortcomings and opportunities for improvement, and identifying a set of concrete mechanisms and ideas that organizers could follow to realize change. The CRC produced a report outlining their findings ([https://docs.google.com/document/d/1EqpF3GWfB6P\\_nVKe-ziUytzklH7iGKhnVamEZh0wiAA/](https://docs.google.com/document/d/1EqpF3GWfB6P_nVKe-ziUytzklH7iGKhnVamEZh0wiAA/)). This document was circulated to the community and a discussion was encouraged on the SIGCOMM Slack workspace. During the discussion, it became clear that there were several approaches of interest where it might be possible to coalesce teams behind further discussion or implementation. Some community members were in favor of making the reviewing process more public (e.g., by using OpenReview). It also seems there may be broad support behind reducing talk lengths at our events, and pre-recording talks.

For us to make lasting changes it will be important for us to have strong-buy in from the community, including a thoughtful approach towards how progress is made. As such, our planned next steps are as follows. The SIGCOMM Executive Committee will issue a standing call for position papers that describe a proposed change to how SIGCOMM operates its conferences or other forms of engagement with the community. These position papers will be posted on a public site where the community can freely comment and discuss, and the authors can revise based on feedback. Rather than waiting for a community-wide consensus to emerge, these changes can be adopted by individual

workshops and conferences, so that as a community we can experiment with a wide range of solutions and learn from the experience.

To provide some degree of coordination, the site for collecting and commenting on the position papers will be overseen by a newly constituted CRC. In addition, the CRC will recommend whether the responsibility for adopting a proposal lies with the PC chairs, the General Chairs, the Steering Committee for the conference, the SIGCOMM Executive Committee, or some combination thereof. Examples of changes under the purview of the PC chairs include new norms for reaching a decision at the PC meeting about a paper with conflicting views; examples of changes under the purview of the Steering Committee include the number of submission deadlines per year, or other multi-year experiments; examples of changes under the purview of the Executive Committee and the Steering Committees include more aggressive co-location to reduce air travel and carbon footprint.

We hope to start a preliminary version of this process at the Community Meeting at our upcoming SIGCOMM conference in September, to be held on Wednesday, September 13. We invite anyone who wants to present a proposal for change to submit a request to speak at this meeting. These requests should provide a brief description of the change and its rationale, any anticipated risks, and proposed evaluation criteria. We will hear as many proposals as we can during the allotted time, and hope that such discussions continue throughout the rest of the conference, and on the CRC web site that would be established thereafter.

## **SPECIAL PROJECTS AND NON-CONFERENCE PROGRAMS**

The SIG continued its aggressive efforts to focus on special projects and other activities in support of our community across the globe.

The SIG kept up its efforts to support the well-being and education of students around the globe. In collaboration with the EU's EMPOWER initiative, and the NSF PAWR Project Office, the SIG continued to co-operate The Networking Channel (<https://networkingchannel.eu/>), an online talk series centered around the networking research and education communities. The channel was launched in March 2021 and has already gained a strong and consistent following, with hundreds of participants every other week. The channel has diverse representation, with participants from all continents, from a broad spectrum of university types (R1/R2, teaching universities, etc.). The talks are interactive, taking live questions and encouraging participation from the community. Topics range from next-generation networking technologies, to how to succeed in graduate school (the latter had over 800 registrants) to how to improve diversity and inclusion in the systems and networking community. We held our first student-run session, allowing students from Brazil, China, and others across the world to meet and discuss issues related to how to succeed in graduate school. The series will continue into the fall, where we expect to have talks on "how do large ISPs work", how networking between LEO satellites is done, digital twins, and more. The SIG also helped launch a spinoff of the Networking Channel for the Southeast Asia region, which we hope will promote inclusion of people from that region into our community.

The SIG also released a beta launch of the Open Library for Computer Networking (<https://openlibrary.web.illinois.edu/>), its online platform for discovering and sharing

resources for teaching, researching, and learning about computer networking. The platform allows a user to search for a variety of materials, ranging from simulators and emulation platforms, to homework and lab assignments, to professional societies and chat services. The platform then displays information about the resource along with some simple guidance on how the resource could be used. Users may post comments about the resource as well as "upvote" (not downvote) resources they like. The site also contains a page listing favorite resources of famous people in our community (<https://openlibrary.web.illinois.edu/peer-favorites>). Along with some simple curation, we hope the site can become a useful and reliable repository of information for the community. It is our hope this site can make it easier for those in our community who have developed useful resources to share them with others, for students to more easily figure out which resources are the best to use and the differences between them. If the platform is successful, we hope to make it available to other SIGs and post resources from other communities.

While many are returning to in-person activities it is also clear the pandemic continues to place a damper on interactions in our community. The SIG continues to operate an ACM SIGCOMM Slack workspace. Slack is a collaborative platform which includes chat functions as well as the ability to share and interact on files and activities. The workspace has been a rousing success, growing to over 4,000 members (approximately 400 of which actively post or read a message during any particular week), and maintaining regular and ongoing discussions on a variety of networking and network-education related topics. The platform also contains a channel run by a licensed social worker from the University of Illinois at Urbana-Champaign Counseling Center to offer emotional and wellness support to students during these challenging times.

We believe the community will need guidance and support as we return to in-person activities. To address this, the SIG was heavily involved in the planning and operations of SIGCOMM'22. The SIG assisted in the creation of a database of industry contacts for sponsorship of the conference, as well as assisted in reaching out to sponsors for funding. This year, the conference received over \$200,000 in funding, and a Diamond sponsor, milestones never achieved in the history of the conference (to the best of our knowledge).

## **KEY ISSUES IN THE NEXT FEW YEARS**

As outlined above, the future of conferences as we come out of the COVID era needs consideration. This future includes issues such as what mix of in person and online to support but goes beyond the format question to potential reconsideration of the number and activities of in person meetings. At SIGCOMM 2023, multiple papers required virtual presentations because none of the authors could attend, due to COVID concerns or visa issues. We should expect challenges with travel to persist. Our DEI survey indicates that we have some work to do in ensuring underrepresented groups feel included in SIGCOMM. We are also planning renewed efforts to build community in regions of the world that have not historically participated in SIGCOMM.

**ACM SIGCSE Annual report**  
**July 2022 – July 2023**  
**Submitted by Alison Clear, Chair 2022 – 2025**

The ACM Special Interest Group on Computer Science Education provides a forum for educators to discuss issues related to the development, implementation, and/or evaluation of computing programs, curricula, and courses, as well as syllabi, laboratories and other elements of teaching and pedagogy.

### **SIGCSE VIABILITY**

SIGCSE is currently a healthy and viable SIG with current membership of over 2600, while we are not back to pre-COVID levels yet our membership is growing each year. A viability report was prepared in November 2022 and approved for the next four years. “The SGB EC congratulates SIGCSE on its program performance and its efforts to mentor their volunteer community by having junior and senior positions for all activities to help volunteers learn about the positions and be advised by a more senior person. The SIG is found viable to continue its status for the next 4 years.”

### **DEI ACTIVITY**

In January of 2023 the Board released the SIGCSE DEI message

“The SIGCSE board is committed to creating a welcoming, safe, and inclusive environment for all members of the SIGCSE community. As stated in our email on October 7th 2022:

“The SIGCSE Board is taking these matters very seriously and are working on specific next steps and a timeline for addressing them. We are committed to developing ways forward to ensure the safety and respect of all members of the SIGCSE community.”

The SIGCSE board is grateful for the feedback already provided by members of the community. This feedback was used to inform our developing plan:

What has been initiated:

- Created the role of board liaison to the ACM Diversity, Equity, and Inclusion Council to ensure that our SIG is building on existing initiatives and is aligned with ACM efforts.
- Met with (and will continue to meet with) leaders of other SIGs to learn about their effective strategies for creating safe and inclusive environments and processes.
- Began to investigate the establishment of a process so people can confidentially and safely share any concern about SIGCSE activities in a neutral space with someone external to the community, and explore their options.
- Created an anonymous virtual suggestion box for the community to submit feedback to the board. Entries will be reviewed at each Board meeting and decisions made about any actions to be taken.
- Explore the creation of a new all-virtual SIGCSE conference to provide another forum for the community in a new, flexible and inclusive format

Plans for each SIGCSE conference:

- Direct conference steering committees to conduct a Diversity, Equity, Inclusion, and Accessibility (DEIA) analysis of any efforts and initiatives they are implementing to

create safe and inclusive environments for all attendees and report findings to the Board. (starting February 2023)

- Recommend the creation of the role of DEIA chair for each conference to serve as a point of contact and coordinate the conference's DEIA initiatives. (starting February 2023)

Planned actions: (by December 2023)

- Host regular listening sessions to solicit input and allow the community to share DEIA concerns.
- Reach out to the individuals or groups that have provided input and/or written calls to action with an invitation to engage in problem-solving and discussion.
- Share participation demographics for each SIGCSE-sponsored conference or event with the community.
- Work with the committees of all SIGCSE-sponsored events to create a culture that ensures representation of scholars from traditionally marginalized groups who are knowledgeable in the topics discussed at the event.
- Identify and implement strategies to minimize bias and increase diversity in all volunteer positions (e.g. conference leadership, committees, reviewers, the SIGCSE Board) and invited speakers.
- Identify and implement strategies to minimize bias and optimize inclusion in our processes for eliciting nominations and selecting recipients of SIGCSE awards.
- Commit to continually educating ourselves about our own biases and blind spots through reading, participating in professional development and discussions, and listening sessions.

“We chose to serve on the SIGCSE board because we want to see our community nurtured to grow and thrive for all members. However, we acknowledge that we do not have all the answers. These initiatives are the beginning of our efforts in helping the community towards this goal. To reach the best outcomes, ongoing community input and engagement is essential. We look forward to working with the community to achieve these.”

## **AWARDS**

SIGCSE continue to support the community with the current awards

- SIGCSE Outstanding Contribution to Computer Science Education
- SIGCSE Lifetime Service to the Computer Science Education Community
- SIGCSE Test of Time

We were very pleased that the initiative of the previous Board in applying for a new award was successful and will be awarded for the first time in 2023.

- SIGCSE Broadening Participation in Computing Education

2022 Award winners

The SIGCSE Outstanding Contribution to Computer Science Education went to Susan Roger, Duke University, USA, for creating JFLAP, changing how the automata course is taught; and for helping to bring computing to primary and secondary schools through her work with the Alice environment. Susan gave a keynote address at the Technical Symposium in Toronto in March 2023 titled “Learning How to Teach Computer Science – And Why I Teach the Way I Do”.

The Lifetime Service to the Computer Science Education Community went to Renée McCauley, College of Charleston, for more than two decades of exemplary service to SIGCSE, the computing education community and ACM; her mentoring and encouragement to others; and her leadership in increasing the global impact of SIGCSE. Renée gave an address at the Technical Symposium in Toronto titled “SIGCSE: A Culture of Service and Community”.

There was no Test of Time awarded in 2023.

## **SIGNIFICANT PAPERS PUBLISHED**

The SIGCSE Technical Conference was held for the first time outside the USA, in Toronto Canada in March 2023. The best paper awards went to:

### **Experience Reports and Tools Track**

#### **CS-JEDI: Required DEI Education, by CS PhD Students, for CS PhD Students**

Bailey Flanigan Carnegie Mellon University, Ananya Joshi Carnegie Mellon University, Sara McAllister Carnegie Mellon University, Catalina Vajiac Carnegie Mellon University

#### **A Summer Camp Experience to Engage Middle School Learners in AI through Conversational App Development**

Gloria Ashiya Katuka University of Florida, Yvonika Auguste University of Florida, Yukyeong Song University of Florida, Xiaoyi Tian University of Florida, Amit Kumar University of Florida, Mehmet Celepkolu University of Florida, Kristy Elizabeth Boyer University of Florida, Joanne Barrett University of Florida, Maya Israel University of Florida, Tom McKlin The Findings Group

#### **Embedding and Scaling Writing Instruction Across First- and Second-Year Computer Science Courses**

Lisa Zhang University of Toronto Mississauga, Bogdan Simion University of Toronto Mississauga, Michael Kaler University of Toronto Mississauga, Amna Liaqat University of Toronto Mississauga, Daniel Dick University of Toronto Mississauga, Andreas Bergen University of Toronto Mississauga, Michael Miljanovic Ontario Tech University, Andrew Petersen University of Toronto

### **Position and Curriculum Initiatives Track**

#### **Programming Is Hard - Or at Least It Used to Be: Educational Opportunities And Challenges of AI Code Generation**

Brett Becker University College Dublin, Paul Denny The University of Auckland, James Finnie-Ansley The University of Auckland, Andrew Luxton-Reilly The University of Auckland, James Prather Abilene Christian University, Eddie Antonio Santos University College Dublin

#### **Case Study: Mapping an E-Voting Based Curriculum to CSEC2017**

Muwei Zheng University of California, Davis, Nathan Swearingen Indiana University–Purdue University Indianapolis, Steven Mills Indiana University–Purdue University Indianapolis, Croix Gyurek Indiana University–Purdue University Indianapolis, Matt

Bishop The University of California, Davis, Xukai Zou Indiana University–Purdue University Indianapolis

### **Computing Education research Track**

#### **Do Intentions to Persist Predict Short-Term Computing Course Enrollments? A Scale Development, Validation, and Reliability Analysis**

Rachel Harred NCSU, Tiffany Barnes North Carolina State University, Susan Fisk Kent State University, Bitu Akram North Carolina State University, Thomas Price North Carolina State University, Spencer Yoder North Carolina State University

#### **Psychometric Evaluation of the Cybersecurity Curriculum Assessments**

Geoffrey Herman University of Illinois at Urbana-Champaign, Shan Huang University of Illinois at Urbana-Champaign, Peter Peterson University of Minnesota Duluth, Linda Oliva University of Maryland, Baltimore County, Enis Golaszewski University of Maryland, Baltimore County, Alan Sherman University of Maryland, Baltimore County

#### **Critical Pedagogy in Practice in the Computing Classroom**

Eric Mayhew McGill University, Elizabeth Patitsas McGill University

The best paper award at ITiCSE 2022 held in Dublin, Ireland was

#### **Semaphore or Metaphor?: Exploring Concurrent Students' Conceptions of and with Analogy**

Briana Brettin, Linda Ott, Julia Hiebel

The best paper award at the ICER conference held in Lugano, Switzerland was

#### **Automatic Generation of Programming Exercises and Code Explanations Using Large Language Models**

Sami Sarsa, Paul Denny, Arto Hellas, Juho Leinonen

## **CONFERENCES**

SIGCSE supports four conferences, three annual and one bi-annual

The **SIGCSE Technical Symposium** was held in Toronto Canada in Marc 2023. This is the first time the Technical Symposium was held outside the USA. The conference was held in hybrid mode and had 1700 attendees. There were three keynote speakers, papers, panels and Special Sessions. There was pre-conference Heads of Department Roundtable which was very well attended along with eight affiliated events. SIGCSE also supports a Kids Camp to enable parents and care givers the opportunity to attend the conference with their children.

The 27<sup>th</sup> annual **Innovation and Technology in Computer Science Education (ITiCSE)** conference was held in Dublin Ireland in July 2022. This conference was hybrid with 240 attendees in Dublin and 136 virtual attendees. This conference is held in collaboration with ACM Europe and Informatics Europe.

The 18<sup>th</sup> Annual **International Computing Education Conference (ICER)** was held in Lugano, Switzerland. ICER 2022 was hybrid and also preceded by a Doctoral Consortium of 18 PhD students. It was attended by 100 in person attendees and 40 virtual attendees.

The keynote speaker (Manu Kapur, “Productive Failure”) was very well received. Evaluations were conducted at the end of the conference in real time.

**ACM Global Computing Education Conference** (CompEd) was not held in 2022, it is now scheduled for Hyderabad, India in December 2023.

## **SPECIAL PROJECTS and TRAVEL GRANTS**

The SIGCSE Special Projects Fund provides grants up to \$5000 per project and has a call for proposals in November and May of each year.

The Special Projects funded in the latter part of 2022 were:

- *AI-Generated Discipline-Specific Programming Problems* - PI **Carl Haynes-Magyar**, Carnegie Mellon University
- *Computing+DEI = Multilingual Computing-Driven Class Material on Diversity, Equity and Inclusion* - PI **Mirella Moro**, Federal University of Minas Gerais in Brazil
- *Let's Play Ball: Understanding Neurodiversity and Accessibility* - PI **Devorah Kletenik**, Brooklyn City University of New York
- *Evidence-Driven K-5 Computer Science Education Updates for Practitioners* - PI **Jordan Williamson**, CSEd Research.Org

## Travel Grants

The Travel Grants have now been renamed the **Henry Walker Travel Grants**

SIGCSE awards up to five grants per year to defray travel expenses of faculty attending the annual SIGCSE Symposium. It was decided in 2023 to award eight travel grants. Travel Grant award winners will receive complimentary Symposium registration plus up to \$500 towards travel expenses. We are particularly interested in encouraging attendance by new faculty and/or faculty who have never been able to attend previously.

The awards for the 2023 TS were:

Sue Yi	United States
Cynthia Oguna	United Kingdom
Dr Ethel Tshukudu	Botswana
Zeyad Ahmed Ali	Egypt
Weena Naowaprateep	Thailand
Sareh Taebi	USA
Adewole Babatunde Kazeem	United States of America
Viraj	India

## **KEY ISSUES**

The first key issue for the next two to three years is to continue our DEIA initiatives and promote and support all our membership. One of the initiatives is the promoting of a Virtual Conference which is scheduled for the last quarter 2024. This is to support members who for what ever reason are unable to travel. We will also be holding up to three doctoral

consortiums to encourage and support our future faculty and members. SIGCSE will also be awarding the first of the Broadening Participation in Computing Education awards.

Another key issue will be to reach out to parts of the world who are active in Computing education however have not been part of our traditional geographical membership. The first is the CompEd conference to be held in December 2023 in Hyderabad, India. We will also be conducting a Doctoral Consortium in conjunction with this conference. We are actively looking for other non-US and non-European, geographical locations.

We will also continue to review, revise and upgrade all the reviewing processes for all the conferences.

**2022-23 SIGDA Annual Report**  
**Prepared by**  
**SIGDA Executive Committee Members**

SIGDA has been a vibrant special interest group that sponsors and organizes many educational and professional activities benefiting the design and design automation community. As the whole society is recovering from the pandemic, this past year has presented some unique challenges but also some good opportunities for hosting virtual events and outreach to broader audiences. Below are the highlights of the activities for the reporting period.

1. **Comment on the ways in which the SIG is a healthy and viable organization**
2. **Describe your efforts related to Diversity, Equity, and Inclusion.**
3. **Provide a list of awards and recipients**
4. **List significant papers on new areas that were published in proceedings**
5. **Describe conference activity**
6. **Comment on special projects and non-conference programs that provided service to some part of your technical community**
7. **A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.**

### **EFFORTS RELATED TO DIVERSITY, EQUITY, AND INCLUSION**

SIGDA is committed to advancing diversity and broadening the participation of professionals from underrepresented groups within the design and design automation community. SIGDA has set aside funds specifically for diversity-related efforts. The fund is managed by the SIGDA Diversity Committee (currently with 11 members spreading across North and Asia, Europe, and South America, and chaired by Evangeline Young, Chinese University of Hong Kong). The committee has resumed some diversity-related activities. Recognizing the importance of diversity and ethics, SIGDA EC has approved the addition of a new position, i.e., SIGDA Diversity and Ethics Chair in 2021. The duties of the Diversity and Ethics Chair include the following:

- Disseminate ACM policies to SIGDA-sponsored conferences and SIGDA-related ACM journals
- Consult and work with ACM SIGDA-sponsored conferences on issues related to diversity and ethics
- Help develop new ethics and diversity policies collected from ACM-sponsored conferences
- Help enforce penalties determined by ACM COPE (Committee On Professional Ethics)

An open call for nomination of the Diversity and Ethics Chair was closed on June 25<sup>th</sup>, 2021. Four candidates were nominated and Prof. Laleh Behjat from the University of Calgary was elected to the new SIGDA EC as the Diversity and Ethics Chair.

### **AWARDS**

SIGDA gave out two major research-related awards in this reporting period.  
SIGDA Pioneer Achievement Award:

To honor a person for lifetime, outstanding contributions within the scope of electronic design automation, as evidenced by ideas pioneered in publications, industrial products, or other relevant contributions. The award is based on the impact of the contributions throughout the nominee's lifetime.

- The SIGDA 2022 Pioneering Achievement Award winner is Professor Ron Rohrer, Southern Methodist University, for the introduction and evolution of simulation and analysis techniques that have supported the design and test of integrated circuits and systems for more than half a century.

#### A. Richard Newton Technical Impact Award in Electronic Design Automation

To honor a person or persons for an outstanding technical contribution within the scope of electronic design automation, as evidenced by a paper published at least ten years before the presentation of the award. This award is jointly sponsored by ACM SIGDA and IEEE CEDA.

- The ACM/IEEE A. Richard Newton Technical Impact Award in Electronic Design Automation in 2023 goes to Moshe Vardi and Pierre Wolper for their paper "An Automata-Theoretic Approach to Automatic Program Verification", in the proceedings of the 1st Symposium on Logic in Computer Science, 1986.

SIGDA gave out two awards targeting junior researchers in this reporting period.

#### ACM Outstanding Ph.D. Dissertation Award in Electronic Design Automation

This award is given to an outstanding Ph.D. dissertation that makes the most substantial contribution to the theory and/or application in the field of electronic design automation.

- The winner of the 2023 ACM Outstanding Ph.D. Dissertation Award in Electronic Design Automation is Zhiyao Xie, for his dissertation "Intelligent Circuit Design and Implementation with Machine Learning", Duke University, Advisor: Yiran Chen and Hai Li.

#### SIGDA Outstanding New Faculty Award

This award recognizes a junior faculty member early in her or his academic career who demonstrates outstanding potential as an educator and/or researcher in the field of electronic design automation.

- The SIGDA Outstanding New Faculty Award in 2023 goes to Tsung-Wei Huang, University of Utah.

SIGDA gave out two service-related awards in this reporting period.

#### Distinguished Service Award

This award is given to individuals who have dedicated many years of their careers in extraordinary services to promoting, leading, or creating ACM/SIGDA programs or events.

- The 2023 SIGDA Distinguished Service Award recipients are
  - Tulika Mitra, National University of Singapore, for her leadership in major SIGDA conferences such as a general chair for ICCAD and ESWEEK, and
  - Patrick Groeneveld, for his multi-year significant contribution to the EDA community, such as DAC finance chair among many others.

#### Meritorious Service Award

This award is given to individuals who have performed professional services above and beyond traditional service to promoting, leading, or creating ACM/SIGDA programs or events.

- The 2023 SIGDA Meritorious Service Award recipients are

- Robert Willie, Technical University of Munich, for his leading positions in major ACM SIGDA conferences, including Executive Committee of DATE, ICCAD, and Chair of the Ph.D. Forum at DAC and DATE,
- Lei Jiang, Indiana University Bloomington, for his leadership and contribution to SIGDA student research forums (SRFs) at ASP-DAC,
- Iris Hui-Ru Jiang, National Taiwan University, for her continuous contribution to SIGDA Ph.D. Forum at DAC and many other events, and
- Jeyavijayan (JV) Rajendran, Texas A&M University, for his leadership in co-founding and organizing Hack@DAC, the largest hardware security competition in the world.

## SIGNIFICANT PAPERS

The paper below received the 2022 ACM TODAES Best Paper Award. The paper introduces an automated design space exploration framework to systematically find better design points for FPGA-based accelerators.

- Atefeh Sohrabizadeh, Cody (Hao) Yu, Min Gao, and Jason Cong, “AutoDSE: Enabling Software Programmers to Design Efficient FPGA Accelerators,” ACM Trans. Des. Autom. Electron. Syst. 27, 4, Article 32 (July 2022), 27 pages.

## SIGDA CONFERENCE ACTIVITIES

In 2023, SIGDA sponsored 17 conferences and workshops as highlighted in the table below:

Asia and South Pacific Design Automation Conference	ASPDAC
Design Automation Conference	DAC
Design, Automation, and Test in Europe	DATE
Embedded System Week	ESWEEK
International Symposium on Field-Programmable Gate Arrays	FPGA
Great Lakes Symposium	GLSVLSI
International Conference On Computer-aided Design	ICCAD
International Symposium on Low Power Electronics and Design	ISLPED
International Symposium on Physical Design	ISPD

International Workshop on Logic and Synthesis	IWLS
International Conference on Formal Methods and Models for Codesign	MEMOCODE
Workshop on Machine Learning for CAD	MLCAD
Network on Chip Symposium	NOCS
International Symposium on Nanoscale Architectures	Nanoarch
Symposium on Integrated Circuits and Systems Design	SBCCI
System Level Interconnect Prediction Workshop	SLIP
International Workshop on Timing Issues in the Specification and Synthesis of Digital Systems	TAU

SIGDA also supported four additional conferences with in-cooperation status. These include the International Conference on Neuromorphic Systems (ICONS), the IEEE International Conference on VLSI Design (VLSID), the IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SoC), and the International Symposium on Quality Electronic Design (ISQED).

The conferences under the SIGDA umbrella continue to maintain an exceptional standard of quality and visibility in the design automation area. Submissions in general continue to go up. For example, submissions to one of our flagship conferences (DAC) increased to 1157 in 2023, from 987 in 2022. Submissions to another flagship conference (DATE) increased to 834 in 2023, up from 728 in 2022. Overall, the biggest challenges faced by conferences were visa issues that impacted attendance and registrations from China, as well as grappling with virtual or hybrid formats that typically have lower registration rates, which in turn led to lower industry physical presence and sponsorships, and overall loss of revenue. This was the case particularly with our flagship DAC conference, and also for other conferences such as DATE and ASP-DAC.

## **SPECIAL PROJECTS**

SIGDA devoted significant efforts to improving diversity and industry relations. Furthermore, in response to the COVID-19 situation, SIGDA, in collaboration with IEEE CEDA, initiated a new virtual seminar series. These activities are summarized below.

## **Industry Collaboration**

The Industrial Advisory Board (IAB) of SIGDA had several discussions about how the IAB contributed to the SIGDA community in general. The IAB generally agrees to improve the presence of industrial experts in SIGDA's education and technical activities and provide necessary support and guidance to the organization of these activities.

## **Who's Who in SIGDA**

This year, we started a new monthly column, called "Who's Who in SIGDA", which introduces and highlights some researchers in the EDA community. The monthly information can be found in the SIGDA e-newsletter and at <https://www.sigda.org/whos-who/>.

## **ACM SIGDA Speaker Travel Grant Program**

This year, we started a new program, called the SIGDA Speaker Series Travel Grant, which actively supports the travels of speakers who are invited to give lectures or talks at local events, universities, and companies, so as to disseminate the values and impact of SIGDA. These speakers can be from either academia or company and are considered good lectures that can help reach out to the audiences in the broad field of design automation. Once the application is approved, SIGDA will issue partial grants to cover the speaker's travel expenses, including travel and subsistence costs. This program can be found at <https://www.sigda.org/programs/acm-sigda-speaker-travel-grant-program/>.

## **Nominating papers to Communications of ACM (CACM)**

SIGDA EC has developed a procedure to nominate one paper each year (starting in 2021) to be considered as a Research Highlight candidate paper in CACM. The goal is to select a high-quality paper with a more general appeal to help promote research in the design automation field.

## **Other activities**

- The Ph.D. Forum at the Design Automation Conference 2022 received a total of 45 submissions out of which 32 contributions were accepted based on 178 reviews from 28 PC members.
- The Early Career Workshop at Design Automation Conference invited a total of 13 researchers from both academia and industry. There are 3 panels covering early career-related topics, including Scientific Research and Funding Opportunities, Career Development: Hiring and Promotion, and Industry Opportunities.
- The SIGDA University Demonstration at Design Automation Conference (Ubooth@DAC) 2022 received a total of 18 submissions. All submissions were reviewed by at least 3 reviewers from the organizing committee or external reviewers. 9 contributions were accepted to present at Ubooth@DAC. Each team had at least one speaker present at the event to showcase their work and interact with participants at DAC. Based on the technical merit and the performance of the presentation, 4 teams were awarded the

“University Demo Best Demonstration”, including 1 first place, 1 second place, and 2 third place.

- The DAC System Design contest had 74 teams registered, with 26 teams submitting working designs. The top teams substantially improved upon results from the previous years, improving speed by more than 7x.
- The Hardware Security capture-the-flag competition, Hack@DAC 2022 at the 59th ACM/IEEE Design Automation Conference organized in collaboration with Intel and Synopsys received a total of 61 participants (23 teams) who made 50 bug submissions
- The SIGDA CADathlon International Programming Contest at the International Conference of Computer-Aided Design (ICCAD) 2022 was held. A total of 14 students (all graduate students) from China, Taiwan, Hong Kong, USA, and Brazil participated in it, and the top two teams were awarded.
- The ACM Student Research Competition (SRC) at ICCAD 2022 was held. A total of 30 students (8 undergraduate and 22 graduate students) participated in it, and the first-place winner from each category advanced to the ACM Grand Finals.
- We are creating our first Job Fair@ICCAD 2022 and sponsoring TinyML Design Contest@ICCAD for the first time.
- The Ph.D. Forum at the 2023 Design, Automation, Test in Europe Conference attracted many contributions based on reviews from 18 PC members. The forum is a great opportunity for Ph.D. students who have completed their Ph.D. thesis within the last 12 months or who are close to completing their thesis to present their work to and discuss it with a broad audience in the system design and design automation community from both industry and academia.
- The Student Research Forum (SRF) at Asia and South Pacific Design Automation Conference (ASPDAC) 2023 accepted 20 participating students from all over the world and there were over 40 participants from both academia and industry.
- Besides the above activities, SIGDA communicates using SIGDA E-News.

## **KEY ISSUES FACING SIGDA**

1. The biggest challenge is the financial situation of the Design Automation Conference (DAC), which was not able to break even in the past several years after all the overheads were deducted from the surplus. The SIGDA leadership is now working closely with the organizers of DAC to get it solved and has made substantial progress on it.
2. SIGDA is now actively seeking growth in emerging topics and economies. SIGDA is pushing consolidation of some small conferences that were heavily impacted by COVID and working with the organizers to find solutions.

3. SIGDA works closely with industrial sponsors to maximize the coverage of sponsorships to conferences and educational activities. Synopsys continued its large lump sum contract with SIGDA to sponsor a bundle of multiple conferences and activities. This model may be extended to other industrial sponsors.

**SIGDOC FY '23 Annual Report**  
**July 2022 - June 2023**  
**Submitted by:**  
**Daniel P. Richards, SIGDOC Past Chair**  
**Huiling Ding, SIGDOC Chair**

## **Overview**

The ACM Special Interest Group for Design of Communication (SIGDOC) provides a forum for researchers and practitioners of the design of communication, including but not limited to those doing work in information architecture, information design, content management, user experience, user documentation (traditional and user-contributed), as well as governmental, scientific, and public participatory contexts. SIGDOC's overall mission is to: advance the state of knowledge; encourage the research; and support the interdisciplinary practice of the design of communication.

## **Health and Viability of SIGDOC**

SIGDOC remains a consistently healthy organization; at the time of this report, we have about 175 members. Most of our members attend and participate actively in our yearly conference. And this year, for SIGDOC '23, we received our highest submission total in recent memory: 132, not including 18 Student Research Competition submissions. In terms of finances, SIGDOC continues to rest upon a significant surplus.

This year (2023) was an election year for the Executive Committee (EC). The new EC consists of longstanding SIGDOC members and participants and we're optimistic about the future. The new EC officers are: Dr. Huiling Ding, North Carolina State University (Chair); Dr. Halcyon Lawrence, Towson University (Vice Chair); and Dr. Chen Chen, Utah State University (Secretary-Treasurer). Returned members include Dr. Daniel Richards, Old Dominion University (Past Chair) and Dr. Jordan Frith, Clemson University (Editor of publication).

Our main publication, *Communication Design Quarterly (CDQ)*, has continued to evolve into one of the more reputable publications in the field of technical communication, in no small part due to its commitment to publishing and reviewing in more equitable ways. As *CDQ* approaches its 12<sup>th</sup> volume in 2024, we expect submission numbers to continue to increase. The editor has been tasked with building connections with other organizations and creating a broader vision for the publication, while the Associate Editor will focus on the publishing process and our commitment to equitable and fair reviews.

## **Diversity, Equity, and Inclusion**

We continued this past year in our commitments to diversity, equity, and inclusion in two ways.

The first is the continued commitment by the EC as a group and the individual members therein to sign the "Anti-Racist Scholarly Reviewing Practices: A Heuristic for Editors, Reviewers, and Authors."<sup>1</sup> This living document was composed by a diverse group of major scholars in the field of technical communication and co-signed by nearly all

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<sup>1</sup> Cagle, L. et al. (2021). *Anti-racist scholarly reviewing practices: A heuristic for editors, reviewers, and authors*. Retrieved from <https://tinyurl.com/reviewheuristic>.

members of the field in significant editorial positions. The open, public document itself gives explicit guidance on how to engage in anti-racist review practices, guiding by the question: *How might we dismantle the existing exclusionary and oppressive philosophies and practices of reviewing in the field of technical and professional communication and replace them with philosophies and practices that are explicitly anti-racist and inclusive?* The SIGDOC EC unequivocally supports this heuristic and is working on integrating its content into our own review practices pertaining to our publications and conference submission systems. The newly appointed Associate Editor will be overseeing these practices.

The second is our continuation of our annual budgetary line item (\$2000) dedicated to inclusion to support projects forwarding justice-centered initiatives in the fields of communication design and technical communication. The most recent CFP for our Design Justice Program supports technical writing work with a nonprofit organization named IDignity.

Full SIGDOC demographic information can be found in Appendix.

## Awards and Recipients

The following awards and recognitions were given over the past year:

### 1. **Career Advancement Research Grants:**

- a. “Designing Crisis Crowdsourcing: A Dynamic Critical Interface Analysis of Crisis Response Documentation in China” — Chen Chen, Ph.D., Utah State University; Yeqing Kong, Ph.D., UNC Wilmington; and Lin Dong, Ph.D., University of International Business and Economics (Beijing, China)
- b. “Leveraging Wiki’s Connective Intelligence in the UX Classroom” — Mai Nou Xiong-Gum, Ph.D., Furman University and Laura Roberts, Ph.D., University of Wisconsin-Platteville

### 2. **Best Paper** (in 2022 conference proceedings):

- a. Megan L. McKittrick. 2022. Climate Change Games as Boundary Objects: Moving Toward Dialogic Communication in Stakeholder Engagement. In Proceedings of the 40th ACM International Conference on Design of Communication (SIGDOC '22). Association for Computing Machinery, New York, NY, USA, 32–41. <https://doi.org/10.1145/3513130.3558975>
- b. Laura E. Roberts and Mai Nou Xiong-Gum. 2022. Wikipedia Editing as Connective Intelligence: Analyzing the Vandal Fighter Role in the “2022 Russian Invasion of Ukraine” Wikipedia Article. In Proceedings of the 40th ACM International Conference on Design of Communication (SIGDOC '22). Association for Computing Machinery, New York, NY, USA, 55–62. <https://doi.org/10.1145/3513130.3558978>

3. **Diana Award**, given every other year (or so); the award is named after Diana Patterson, past President of SIGDOC for three terms (1980–89). The award is given to an organization, institution, or business for their long-term contribution to the field of communication design. This year’s winner was EuroSIGDOC. EuroSIGDOC, ACM SIGDOC’s European Chapter, consists of a group of researchers and practitioners wanting to pursue the SIGDOC mission in a European context. Like SIGDOC, EuroSIGDOC focuses on the design of communication as it is taught, practiced,

researched, and conceptualized in various fields, including technical communication, software engineering, information architecture, and usability.

#### 4. Student Research Competitions (from 2022 Conference):

##### Graduate Division:

<b>First Place</b> Chenxing Xie	North Carolina State University	COVID-19 Poster Design in the U.S. and China: A Cross-Cultural Visual Content Analysis
<b>Second Place</b> Jiaxin Zhang	Texas Tech University	Web Usability and Content Strategy: A Study of University's COVID-19 Website
<b>Third Place</b> Meghalee Das	Texas Tech University	Designing for Cultural Inclusivity: A Study of International Patrons' User Experience with University Library Services

We plan on given the same awards next year, save for the switching to the Diana Award (alternating years for Diana and Rigo Awards).

##### Significant Proceedings Papers

Some significant proceedings papers, based on clicks, downloads (min. 150), and citations, are as follows:

- Emma J. Rose, Craig M. Macdonald, and Cynthia Putnam. 2022. Teaching Design Systems: Towards a flexible and scalable model for the UX classroom. In Proceedings of the 40th ACM International Conference on Design of Communication (SIGDOC '22). Association for Computing Machinery, New York, NY, USA, 107–113. <https://doi.org/10.1145/3513130.3558985> [3 citations]
- Charlie Rioux, Scott Weedon, Anna Mackinnon, Dana Watts, Marlee R. Salisbury, Lara Penner-Goeke, Kaeley M. Simpson, Jen Harrington, Lianne M. Tomfohr-Madsen, and Leslie E. Roos. 2022. Translating the Knowledge Gap Between Researchers and Communication Designers for Improved mHealth Research. In Proceedings of the 40th ACM International Conference on Design of Communication (SIGDOC '22). Association for Computing Machinery, New York, NY, USA, 157–160. <https://doi.org/10.1145/3513130.3558997> [1 citation]

These pieces also do a good job at representing the various areas of expertise of our members.

##### Conference Activity

Our flagship conference is our annual SIGDOC conference, which typically takes place in the summer or fall of each year. The SIGDOC 2022 conference took place in October 6<sup>th</sup> through 8<sup>th</sup> in Boston, MA, USA. The theme was “Return, Reassess, Resolve.” The conference committee included:

- Michael Trice, Massachusetts Institute of Technology: Conference Chair
- Donnie Johnson Sackey, University of Texas at Austin: Program Co-Chair
- Candice Welhausen, Auburn University: Program Co-Chair
- Jack T. Labriola, Truist: SRC Co-Chair
- Sarah Read, Portland State University: SRC Co-Chair

- Jordan Frith, Clemson University: Sponsorship Chair
- Daniel L. Hocutt, University of Richmond: Technical Editor

We had 38 items that were peer reviewed and published in the proceedings, including 31 papers, poster, and panel abstracts and 7 poster abstracts as part of the Student Research Competition. We saw a robust engagement with graduate students who participated in our Microsoft Student Research Competition. At the conference, we included the following features:

- Keynote by Rigo Award Winner Dr. Miriam Williams, Professor of English and Associate Chair of Texas State University's Department of English. Prior to her career in academia, she worked as a health and safety inspector, policy analyst, policy writer/editor, and program administrator for State of Texas agencies. Her books and articles focus on public policy writing, race and ethnicity, and critical analysis of historical discourse. Her publications include articles in *Technical Communication*, *Journal of Technical Writing and Communication*, *Journal of Business and Technical Communication*, *Technical Communication Quarterly*, *IEEE Transactions on Professional Communication*, and *Programmatic Perspectives*. Her co-edited book with Dr. Octavio Pimentel *Communicating Race, Ethnicity, and Identity in Technical Communication*, received CCC's 2016 Best Original Collection of Essays in Scientific and Technical Communication award and her co-authored article with Dr. Natasha N. Jones won the CCC's 2020 Best Article Reporting Historical Research or Textual Studies in Technical award. She is an ATW Fellow and Editor-in-Chief of the Society for Technical Communication's journal, *Technical Communication*.
- Keynote by Dr. Prajwal Ciryam, titled "Talking Fast and Beeping Loud: Critical Communication in Critical Illness." Prajwal Ciryam is a physician-scientist interested in treating and studying severe injury to the nervous system, who has written about the interface of medicine, technology, and public policy for a variety of publications, including Wired, Slate, and The Washington Post. He is an incoming Assistant Professor in the Department of Neurology and the Shock Trauma Center at the University of Maryland, where he will be practicing neurocritical care and conducting research into the biological mechanisms of neurological deterioration after traumatic brain injury.
- Robust workshops on the following topics:
  - Design Coalitions: Mapping Participatory Design Work in PTC
  - Grant Writing: A Heuristic for Ethical Collaboration
  - The Pedagogy of User Experience: Designing UX Assignments within a Community of Practice
- Ignite talks featuring industry practitioners in the Boston region.

The research that our members are presenting at our conference continues to address salient issues and themes in the fields of communication design, user experience, and technical communication.

## Special Projects

There are currently three special projects at various stages of development:

1. *Ad Hoc Committees*. We have successfully established two ad hoc committees: Data Sustainability and Structured Authoring.

2. *Open Access Resources.* The SIGDOC Chair and some members are working towards a project titled DART (data repository), which would provide open access data from various publications in the field of technical communication.

## **Key Issues for the Future**

We have identified the following issues and plans that will occupy our time over the next 2 years:

- *Conference siting.* We will continue to work on formalizing our conference site selection framework. We currently have the PAF drafted for our 2024 conference, to be held at George Mason University.
- *Connecting to industry.* We are still committed to community partnerships through the development of a Community Liaison position on the board, whose responsibility would be to do outreach for community partners and solicit and program at least one community-driven panel. We also think investing more in Technical Committees can help connect to industry in substantial ways.
- *More than a conference.* We hope to continue to think through offering value for members outside of our annual conference, perhaps through a spring workshop series.

## **Appendix**

We have included the most recent (August 2023) demographic data below for SIGDOC and all ACM members across the nearly 40 SIGs, for context. They are broken down into five categories:

- 1) Age ranges
- 2) Job functions
- 3) Genders
- 4) Under-represented groups
- 5) Disabilities

## **SIGecom FY'23 Annual Report**

**July 2022 – June 2023**

**Submitted by: Nicole Immorlica, Scott Kominers, and Katrina Ligett**

The ACM Special Interest Group on Economics and Computation (SIGecom) is the leading professional organization in the field of economics and computation. Our interdisciplinary work is united by the common goal of using economic ideas and computational reasoning to understand and improve social and economic interactions. SIGecom seeks to encourage research and applications at the interface between computer science and economics, and promote the sharing of new ideas across those and related disciplines.

SIGecom's three primary activities include: convening technical events; adjudicating awards; and managing community announcements. Our main technical events are the annual *Conference on Economics and Computation (EC)* and the *SIGecom Winter Meetings*. Our awards include EC best paper awards, the dissertation award and the test-of-time award. This year we also presented the inaugural winners of two new career awards: the Mid-Career Award and the Lifetime Achievement Award. Our community announcements are disseminated through a combination of the electronic newsletter *SIGecom Exchanges*, our moderated mailing list, and our Twitter account.

The *24th ACM Conference on Economics and Computation (EC'23)* was held in hybrid format with the main physical activities from July 9-12, 2023 in London, UK. We additionally ran virtual pre-conference events including tutorials, a mentoring workshop, contributed posters, highlights beyond EC talks, and talks of accepted papers whose authors were unable to attend the physical event. The EC'23 program chairs were Jason Hartline (Northwestern University) and Larry Samuelson (Yale University); the general chair was Kevin Leyton-Brown (University of British Columbia); the local chairs were Maria Polukarov (Kings College London) and Felix Fischer (Queen Mary University of London); the virtual chair was Mallesh Pai (Rice University). We received 622 technical paper submissions (approximately 12% more than last year), of which 162 were accepted for presentation, resulting in an acceptance rate of 26% (consistent with last year). We had 487 registrants of which 360 were physical (compared to 579 and 270, respectively, last year).

The *2nd ACM SIGecom Winter Meeting* took place virtually on February 22, 2023. The workshop lasted six hours, combining a technical workshop program with ample opportunity for socialization and networking. The goals of the meeting were: a) to bring the SIGecom community together in a broadly accessible and free virtual environment; and b) to expose the SIGecom community to emerging research topics that are adjacent to SIGecom. The 2023 meetings were organized by Scott Kominers (Harvard University) and Matt Weinberg (Princeton University) and brought together researchers from economics and computation and adjacent communities to focus on the topic of Web3/Blockchain/Cryptocurrencies (and the such). The format included a tutorial by Jacob Leshno (University of Chicago); a panel with Barnabé Monnot (Ethereum Foundation), Andrés Monroy-Hernández (Princeton University), Elaine Shi (Carnegie Mellon University); a fireside chat with Tim Roughgarden (Columbia); and a case study presented by Scott Kominers (Harvard University). The meeting emphasized being inclusive to young researchers and those outside the core field, while also encouraging active participation and networking.

The SIG gave six awards in 2023.

This year, SIGecom issued two new career awards. The SIGecom Lifetime Achievement Award recognizes an outstanding individual who has made significant and long-lasting contributions to the field of economics and computation, influencing and setting direction for decades of research. The inaugural 2023 Lifetime Achievement Award was issued to:

Noam Nisan (Hebrew University) and Christos H. Papadimitriou  
(Columbia University)

for seminal and groundbreaking work that inspired a vast community and led to the creation of the field of economics and computation.

The SIGecom MidCareer Award recognizes outstanding individuals whose contributions have had great impact in the field of economics and computation and whose employment as a faculty member or full-time industrial researcher started within the past 15 years (or equivalent duration in case of career interruption). The inaugural 2023 MidCareer Award was issued to:

Michal Feldman (Hebrew University) and Robert D. Kleinberg  
(Cornell University)

for contributions to algorithmic mechanism design, algorithmic contract design, and combinatorial allocation problems; and for advancing our understanding of on-line learning and decision problems and their application to mechanism design, respectively.

Additionally, the SIG continued issuing historical awards. The Test of Time award recognizes an influential paper or series of papers by a single author or team of authors that has had significant impact on research or applications in the field of economics and computation. The 2023 Test of Time Award was issued to:

“Marriage, honesty, and stability” by Nicole Immorlica and Mohammad Mahdian, originally published in the Proceedings of the 16th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2005.

“Unbalanced random matching markets” by Itai Ashlagi, Yash Kanoria, and Jacob D. Leshno, originally published in the Proceedings of the 14th ACM Conference on Electronic Commerce (EC), 2013.

for explaining an apparent gap between the theory and practice of matching markets and helping us understand why small cores are so common.

The SIGecom Doctoral Dissertation Award recognizes an outstanding dissertation in the field of economics and computation. The 2022 Doctoral Dissertation Award was issued to: Modibo Camara (Northwestern University), “Complexity in Economic Theory”

for combining computational tractability and decision theory, thereby showing that complex decision problems can be better approximated by decisions that are inconsistent with the paradigm of expected utility. Honorable mentions were Paul Gözl (Carnegie Mellon University) and Kangning Wang (Duke University).

Best Paper Awards are given to work of outstanding quality presented at the ACM Conference on Economics and Computation. We issued two best paper awards for papers published in EC’23. The Best Paper was:

“Which Wage Distributions are Consistent with Statistical Discrimination?” by Rahul Deb and Ludovic Renou.

The Best Paper with a Student Lead Author was:

“Dynamic Concern for Misspecification” by Giacomo Lanzani.

Our *Exchanges* newsletter continues to publish two issues annually. The current editors are Irene Lo (Stanford University) and Sam Taggart (Oberlin College). In a long-standing effort to improve the EC academic job market, *Exchanges* again collected and published bios of all job market candidates in the fall issue. The spring issue again included a student-led summary of the highlights of the SIGecom Winter Meetings, as well as a report on the SIG-supported EEAMO conference. New this year, the spring issue also included statements from SIGecom Officers candidates. SIGecom also maintains a website, a Twitter account, a YouTube channel, and a mailing list. The information director, who manages these resources, is Yannai Gonczarowski (Harvard).

SIGecom’s volunteer development is extremely strong. Many dozens of people serve across a wide range of roles: in the conference organization committee; organizing committees for workshops and tutorials; award committees; SIGecom *Exchanges* editors; SIG executive; and a wide variety of ad hoc committees and special-topic volunteer roles. We are extremely conscious of diversity—particularly, but not limited to, diversity across research areas, gender, and countries of origin—and have been very successful in ensuring that our volunteer leaders are diverse, reflective of the community at large, and top-caliber researchers without exception.

**SIGENERGY FY'23 Annual Report**  
**Aug 2022 - July 2023**  
**Submitted by: David Irwin, Chair**

## **About**

ACM SIGEnergy is a professional forum for scientists, engineers, educators, and professionals for discussing energy systems and energy informatics. It brings together an inter-disciplinary group of computer scientists with diverse backgrounds in sensing, modelling, machine learning, optimization, control, network and systems design, and experimentation to discuss and address key challenges in future energy systems, and their impact on society. SIGEnergy covers a broad range of topics in energy informatics, energy system design, learning and prediction, analysis, and operation ranging from building energy management, renewable energy modelling and integration, energy storage system analysis, electric vehicle modelling and optimal operation, data-centre energy management, transportation system innovation, grid modernization and operation, and energy impact on climate and society.

SIGEnergy completed the third year of its existence since being chartered as a new SIG in November 2020. The SIG is serving a broad community of energy and sustainability researchers across the world, both from academia and industry. We sponsor two successful, single-track, high-impact conferences, one of them (Buildsys) in cooperation with other SIGs, as well as a number of workshops. There are a number of highlights to report from the past year.

## **Initiatives**

This year was a transitional year for SIGEnergy, as it held its first SIG-wide election, and is transitioning a new executive committee as of July 1st, 2023. David Irwin was elected the new SIGEnergy chair (replacing Prashant Shenoy), Xiaofan (Fred) Jiang was elected the new vice-chair (replacing Srinivasan Keshav), and Omid Ardakanian was elected the new treasurer (replacing Fred Jiang). Many other positions are expected to also transition as well.

SIGEnergy continued a number of initiatives from last year, including quarterly publications of Energy Informatics Review (EIR), a SIGEnergy YouTube channel to host talks (which is linked to the ACM YouTube channel and has recording from recent conferences), and a wiki page for papers from both computer science and power system communities on employing machine learning techniques for solving power system problems.

SIGEnergy has also started some new activities. These include a monthly graduate student seminar series (<https://sites.google.com/view/sigenergy-seminar/>), and sponsorship of the Workshop on Sustainable Computer Systems (HotCarbon), which is co-located with the OSDI conference. The proceedings of HotCarbon '23 are expected to be published in a future issue of EIR.

## **Diversity and Inclusion**

Prof. Astid Niesse (U. Oldenburg, Germany) served as SIGEnergy's first Director of Diversity and Inclusion this past year with the goal of increasing the SIGs DEI activities.

The SIG conferences are continuing their efforts to improve gender and geographic diversity at its events. The conference chairs focused on creating a diverse TPC, and striving to include ~ 25% women in its program committees. We will continue these efforts in the coming years. Analyzing our DEI metrics is one of the first tasks that has to be started to better fulfill our mission in this regard. In addition, in collaboration with SIGMETRICS, SIGEnergy organized a joint, well-attended networking dinner at FCRC for female and non-binary scientists to promote gender equality and grow the diversity of our community.

## **Awards**

SIGEnergy awarded its first SIGEnergy Doctoral Dissertation Award and first SIGEnergy Rising Star Award. Both awardees were selected from multiple nominations that included letters of support and, in the case of the dissertation award, each candidate's dissertation. Nominations were open, and the call for nominations was disseminated via the SIGEnergy mailing list. A SIGEnergy awards committee selected the recipients. The SIGEnergy Doctoral Dissertation Award was presented to Priya Donti at the eEnergy conference, and the SIGEnergy Rising Start Award was presented to Baosen Zhang, also at the eEnergy conference. In addition, the eEnergy conference applied for and received approval from ACM to award an annual Test of Time award going forward, which goes to a paper from a prior conference that has had significant impact on the field. The conference plans to seek nominations for the Test of Time award next year.

## **Conferences**

SIG Energy sponsors two major conferences: ACM e-Energy and ACM BuildSys.

ACM eEnergy 2023 was held as an entirely in-person conference (for the first time since the COVID-19 pandemic) in Orlando, Florida. The conference was part of ACM FCRC and co-located with multiple other prominent ACM conferences, and also included 4 co-located eEnergy workshops. The conference program included 32 full papers and 16 note papers, two eEnergy-specific industry keynote speakers and the FCRC plenary keynote speakers, and a reception and poster session. The conference also featured talks from the presentation of the first SIGEnergy Doctoral Dissertation Award (2022), SIGEnergy Doctoral Dissertation Award Honorable Mention (2022), and SIGEnergy Rising Star Award (2022), as mentioned above. The conference was well-attended, and also included participation from attendees of other FCRC-located conferences. This year, the conference moved to a 2 deadlines per year format with both a fall and winter deadline with an opportunity for revision within each period. The goal is to give authors more flexibility in submitting, and provide them feedback that can improve the quality of their papers. Since this was the first year of the new format, there were fewer papers submitted to the new fall deadline. The chairs learned from the process this year, and are continuing with this format next year with some slight modifications.

ACM BuildSys 2022 was held as an entirely in-person conference (also for the first time since the COVID-19 pandemic) in Boston, Massachusetts, and was co-located with ACM SenSys 2022. The conference was well-attended with its program featuring 34 full and note paper presentations, a poster/demo session with 15 poster/demos, a joint keynote

with ACM SenSys, a BuildSys-specific keynote, as well as 7 co-located BuildSys workshops and 1 tutorial on electricity demand forecasting.

Additional conferences and workshops are currently discussed to be qualified as ACM eEnergy sponsored, including the European Conference “DACH+ Energy Informatics Conference”, and further workshops in this area. The SIG’s own outlet Energy Informatics Review is discussed to be included in these activities as well.

### **Significant papers**

Both e-Energy and BuildSys continue to attract a diverse set of papers. Both conferences recognize their best papers through best paper awards.

The recent ACM e-Energy 2023 conference recognized a paper on the topic of transportation and shipping optimization. The paper was titled “Follow the Sun and Go with the Wind: Carbon Footprint Optimized Timely E-Truck Transportation,” and authored by Junyan Su, Qiulin Lin, and Minghua Chen (City University of Hong Kong).

The 2022 ACM BuildSys conference recognized a paper on the topic of virtual power plants with a best paper award. The paper was titled “On Efficient Operation of a V2G-Enabled Virtual Power Plant,” and authored by Saidur Rahman (University of Alberta), Linda Punt (Rotterdam School of Management, Erasmus University), Omid Ardakanian (University of Alberta), Yashar Ghiassi-Farrokhfal (Rotterdam School of Management, Erasmus University), Xiaoqi Tan (University of Alberta)

### **Finance**

On the financial front, both conferences were profitable in this past year. Despite being a new SIG, the SIG’s finances continue to be strong. This has allowed us to continue to offer funding for student focused events and free registrations, and travel support for in-person events.

### **Issues facing the SIG**

As a three year old SIG, we are still in the process of forming a community that focuses on energy systems and informatics. The lack of in-person conferences from 2020-2022 negatively affected community building activities. The topic of energy and sustainability is growing in importance globally, and we hope to grow our membership in the coming year to ensure long-term viability of our SIG.

**SIGEVO FY'23 Annual Report**  
**June 2022 - July 2023**  
**Submitted by: Franz Rothlauf, Chair July 2019-July 2023**

**EXECUTIVE BOARD**

This year, there were changes in the executive board.

There are three newly elected members (Francisco Chicano, Sara Silva, and Heike Trautmann) and three members of the board have been re-elected (Anne Auger, Carlos Artemio Coello, and Franz Rothlauf). Three members left the board (Christian Gagne, Lee Spector, and Una-May O'Reilly). The members of the current Executive Board is available on SIGEVO web site.

**Comments on the ways in which the SIG is a healthy and viable organization**

Currently, SIGEVO is doing well.

SIGEVO continues to be in good shape financially. Our reserves are healthy. This year, SIGEVO gave out 25k for student travel grants. A Call for innovative projects have been issued during GECCO closing session.

This year was the second hybrid GECCO which allowed not only remote participation but also remote presentation. The hybrid format was a large success (around 1,000 participants). We had around 630 onsite participants and 350 online participants. Around 20% of the presentations were given online. Switching between online and on-site presentations as well as questions was smoothless.

We believe that the high numbers of attendees are the result of the higher inclusiveness of the hybrid format of GECCO. Along with a high number of participants, we have a high number of SIGEVO members.

The success of GECCO is in sharp contrast to the development of our main competing conference Congress on Evolutionary Computation, which was held in 2023 in Chicago. In past years, this event had similar size than GECCO. After running CEC in 2022 as a pure on-site event, the number of attendees for the pure on-site event in Chicago dropped down to less than 150 in 2023. It seems that the hybrid character of GECCO 2023 is much more attractive than the onsite-only character of CEC 2023.

**Describe your efforts related to Diversity, Equity, and Inclusion**

We are constantly working on increasing diversity, equity, and inclusion. For the officers, Emma Hart has been elected as new vice-chair. 50% of the newly elected members of the board were female. The woman-at-GECCO workshop (online this year) was a great success with many participants and interesting discussions.

The next year's GECCO Editor in Chief is female. Furthermore, around a third of all track chairs are female.

As we run GECCO this year as a hybrid event, we were able to increase the inclusiveness of GECCO. We had more submissions from underrepresented countries. This would not have been possible without offering an online participation to the conference.

### **Provide a list of awards and recipients**

#### 2023 SIGEVO Outstanding Contribution Award

- Emma Hart
- Carlos Coello

#### 2023 SIGEVO Impact Award

- Cheney N., MacCurdy R., Clune J., Lipson H.: Unshackling evolution: Evolving soft robots with multiple materials and a powerful generative encoding. GECCO 2013, pp. 167-174

#### 2023 SIGEVO Dissertation Award

- Winner: Marcelo De Souza (“Automatic Algorithm Configuration: Methods and Applications”)

#### 2023 SIGEVO chair lecture

- Evolutionary Computation Evolving. Ken de Jong

#### GECCO awards:

##### Competitions:

- 10 competitions were held at GECCO-2023 with awards and prizes presented at the SIGEVO Annual Meeting.

##### Humies Awards:

- The most prominent competition at GECCO is the Humies Award for the best human-competitive application of Evolutionary Computation methods published in the last year. Strict criteria are applied for what work becomes eligible in the competition, and a panel of five independent judges is responsible for the selection of winners of \$10,000 in cash prizes donated by Third Millennium Online Products Inc. Eight were selected as finalists, and presented during GECCO. Three of them were awarded.

##### GECCO Best Paper Awards:

- were given in different categories. The same rules as before applied to the nominations (the minimum submission numbers for a best paper award are 20, with smaller tracks collaborating to select a best paper among their union set).

### **List significant papers on new areas that were published in proceedings**

To identify significant papers on new areas is a difficult task as many breakthroughs only become viewed as breakthroughs a few years after they have been published.

The following papers maybe promising papers:

- Multi-Objective Multi-Gene Genetic Programming for the Prediction of Leakage in Water Distribution Networks. By Matthew Hayslep, Edward Keedwell, Raziye Farmani
- The Impact of Morphological Diversity in Robot Swarms. By Geoff Nitschke, Sindiso Mkhathshwa
- First Improvement Hill Climber with Linkage Learning -- on Introducing Dark Gray-Box Optimization into Statistical Linkage Learning Genetic Algorithms. By Michal Witold Przewozniczek, Renato Tinós, Marcin Michal Komarnicki
- Grammar-guided Linear Genetic Programming for Dynamic Job Shop Scheduling. By Zhixing Huang, Yi Mei, Fangfang Zhang, Mengjie Zhang

### **Describe conference activity**

#### GECCO 2023 (July 2023)

- This was a hybrid event in Lisboa. We allowed online presentation and participation.
- High number of submissions (575)
- Very high number of participants: around 1,000 (630 onsite and 350 online)
- Positive experience on running the event hybrid. Future GECCOs will also be hybrid.
- Whova well accepted by attendees.

#### FOGA 2023 (August 2023)

- Small conference (25 participants) on foundations of genetic algorithms.
- Location: Potsdam, Germany

GECCO 2024: to be planned in Australia. Planning on track.

### **Comment on special projects and non-conference programs that provided service to some part of your technical community**

This year, a lot of energy went into improving the hybrid character of GECCO. We organized a successful summer school just before GECCO.

### **A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.**

- Optimize the hybrid format of GECCO.
- How can we further increase sustainability and reduce our carbon footprint? This question is related to the future hybrid format. The plan is to aim for onsite participation for those researchers that have short travel times to the conference location; in exchange, researchers that have long travel distances should have the change to participate online. We believe that such a format also increases inclusiveness.

**SIGHPC Annual Report**  
**July 2022 - June 2023**  
**Submitted by: Christine Harvey, Chair**

***The scope of SIGHPC specialty is high performance computing (HPC) in the broadest sense of the term - spanning the full range of high-performance technologies, systems, and applications. It embraces not only people who study, develop, teach, or support HPC, but also those engaged in applying HPC across a broad spectrum of scientific, engineering, and business domains.***

### **Health and Viability**

SIGHPC has an active and vibrant professional and student membership, four co-sponsored conferences (and many more events that are in-cooperation with the SIG), as well as a variety of fellowships, awards, and travel grants that are designed to foster a spirit of community among HPC practitioners. SIGHPC continues to maintain a strong financial position following the COVID-19 pandemic while still managing and growing programs for our community with a focus on educational and career building activities for members of groups historically underrepresented in computing and HPC.

### **Diversity, Equity, and Inclusion**

SIGHPC approaches Diversity, Equity, and Inclusion (DEI) through our sponsored programs including fellowships, awards, travel grants, and sponsored programs for students at our conferences.

#### *Fellowships*

The ACM SIGHPC Computational & Data Science Fellowships awarded its eighth class of fellows. Specifically focused on women and students from racial/ethnic backgrounds that have not traditionally participated in the computing field, the program is open to students pursuing degrees at institutions anywhere in the world. To date we have awarded a total of 79 fellowships to members of underrepresented groups in computational and data science, some with as long as 4 years of support. Awardees are given a \$15,000 fellowship and recognized at the prestigious annual SC conference. The total year-year value of the program is \$3M. Of the six students named as winners this year, five are women; and three are underrepresented minorities in their country of study. This year's fellows will be provided travel support to SC23 and will be recognized in the conference's awards ceremony. SIGHPC plans to provide additional travel support to fellows from past cohorts that wish to attend SC.

During FY22, SIGHPC contracted an evaluation of the Fellowship program to learn more about the long-term impact of the program and to see how the program can be improved. The initial outlook for program success is promising and we received valuable feedback on how to better engage the fellows and create community in the program in hopes of keeping past participants engaged in the world of HPC.

#### *Emerging Woman Leader in Technical Computing*

The SIG also sponsors the SIGHPC Emerging Woman Leader in Technical Computing Award, an annual award open to any woman who has engaged in HPC and technical

computing research, education, and/or practice for 5-15 years since receiving her highest degree. This international award creates a new career milestone achievement, and also establishes a cohort of role models for students and professionals who are just getting started in our field. The awardee is recognized at the SC awards ceremony with a \$2,000 cash prize, a plaque, and travel support to SC. During the past year we updated the award to be distributed annually as opposed to biannually.

### *Travel Grants*

Student travel and early career grants help build the HPC workforce pipeline, and ensure that new voices can participate in our largest conferences. SIGHPC offers travel grants all four conferences. To further sustain the HPC workforce pipeline, After launching early career travel grants in 2022, SIGHPC has seen enthusiastic participation from our conferences and travel grant awardees.

### *HPC Immersion*

The SIG continued its effort to spark interest among undergraduates in computing and HPC through its HPC Immersion (HPCI) program, now in its fourth year. HPCI engages students in the SC conference and provides them with a variety of guides and mentors to support and engage them during the conference. The HPCI program targets undergraduate students from communities typically communities traditionally under-represented in HPC with little to no experience in HPC from smaller four-year institutions and community colleges. Students receive training on the basics of HPC leading up to the conference and each student participates in a Guided Interest Group (GIG), led by a SC Lead Student Volunteer on a technical topic. The GIG leads plan a schedule of sessions related to a particular topic (e.g., machine learning, visualization) and coordinated pre- and post-session discussions for the cohort of 20 HPC Immersion Students. Each HPC Immersion student is assigned a peer mentor (a lead student volunteer) and a mentor from the professional community. Participants are encouraged to fully participate in student programs and present on their experience to the rest of the community at the end of the conference.

### *CARES*

SIGHPC CARES serves as a resource for those who experience discrimination and/or harassment in violation of ACM's policies governing SIG activities: policy against discrimination and harassment, policy on plagiarism, misrepresentation, and falsification; policy on coercion and abuse in the ACM publications process; and policy on roles and responsibilities in ACM publishing. CARES supports individuals by allowing them to work with established members of the SIGHPC community, who are approachable and willing to listen and help navigate the SIGHPC and ACM reporting and accountability process. After a successful pilot at SC21 in November of 2021, CARES has now been adopted as a permanent feature of the SC Conference. SIGHPC CARES has a presence at the PEARC23 conference and we plan to continue expanding to our other conferences in FY24.

### *Demographic Questions*

When ACM released updated demographic questions for conferences and SIG activities, SIGHPC quickly responded and updated our internal tracking mechanism for awards and grants and worked with our conferences to ensure a smooth transition to the new system.

We are excited to use this new, standardized information to measure and evaluate engagement across activities.

## **Awards**

During this reporting period, three major SIG awards were conferred:

- SIGHPC Outstanding Doctoral Dissertation Award
- Emerging Woman Leader in Technical Computing (EWLTC) Award
- Award for Outstanding Contributions to Computational Science Education

The SIGHPC Outstanding Doctoral Dissertation Award was won by Dr. Keren Zhou. Dr. Zhou's dissertation tackled the difficult research problem of understanding the performance of application codes accelerated on graphical processing units (GPUs), through the design and development of innovative techniques for performance instrumentation, measurement, and analysis, particularly in the context of the latest GPU technologies in use on high-end HPC platforms. The award will be presented at the SC23 conference in November.

The ERLTC Award is now awarded annually and was awarded to Dr. Amanda Randles. Dr. Randles is the Alfred Winborne and Victoria Stover Mordecai Assistant Professor of Biomedical Sciences at Duke University and holds positions with the departments of Biomedical Engineering, Engineering and Materials Science, and Computer Science. She is also a member of the Duke Cancer Institute. She is recognized for her innovative work in developing new approaches to circulatory blood flow simulation at all scales of computing, as well as her dedicated mentorship and community service. The award will be presented at the SC23 conference in November.

In November of 2022, the SIGHPC Education chapter conferred its first Award for Outstanding Contributions to Computational Science Education this year. The award is a biannual education award to recognize outstanding contributions to computational, data-enabled science, and HPC education and training in all disciplines. Dr. Robert Panoff was selected as winner during FY22 and was announced during the public presentation of the award at the SC22 conference.

SIGHPC's conferences present other awards and recognition (such as the annual SC Test of Time Award, the Gordon Bell Award, and others) that are not included here.

## **Significant papers on new areas that were published in proceedings**

The SIG sponsors several conferences that offer best paper recognition; this year's technical paper highlights are selected from those events which recognize current state of the art.

The ACM Gordon Bell Prize is awarded each year to recognize outstanding achievement in high-performance computing; awarded by ACM, it is presented at the annual SC conference. The technical papers that accompany the finalists' submissions are important in the HPC community as demonstrations of what is possible and a record of state-of-the-art practice. The winner this year is:

Pushing the Frontier in the Design of Laser-Based Electron Accelerators with Groundbreaking Mesh-Refined Particle-In-Cell Simulations on Exascale-Class Supercomputers (<https://doi.ieeecomputersociety.org/10.1109/SC41404.2022.00008>)

In recognition of the contribution of supercomputing to approaches to manage the COVID-19 pandemic, the Gordon Bell committee created a new award, the ACM Gordon Bell Special Prize for High Performance Computing-Based COVID-19 Research. This prize was awarded for the second time at SC22. The winning paper is:

GenSLMs: Genome-scale language models reveal SARS-CoV-2 evolutionary dynamics (<https://doi.org/10.1101/2022.10.10.511571>)

The best professional paper at SC22 (Dallas, TX, USA) was ProbGraph: High-Performance and High-Accuracy Graph Mining with Probabilistic Set Representations, and the best student paper at that event was Scalable Automatic Differentiation of Multiple Parallel Paradigms through Compiler Augmentation. SC22 also awarded the best reproducibility advancement to HammingMesh: A Network Topology for Large-Scale Deep Learning.

PPOPP 2023 awarded the best paper distinction to Provably Fast and Space-Efficient Parallel Biconnectivity and Best Artifact to High-Performance and Scalable Agent-Based Simulation with BioDynaMo

The best paper at PASC 2023 (Davos, Switzerland) was FourCastNet: Accelerating Global High-Resolution Weather Forecasting Using Adaptive Fourier Neural Operators.

The PEARC Conference was held in July of 2023, moving it to next year's report. Best papers for that conference will be shared in the following year's report. Papers from PEARC22 (Boston, US) were shared in the FY22 report.

## **Conference Activity**

During ACM FY23 all four of SIGHPC's four co-sponsored events were held in-person (most with opportunities for remote participation). In-person or hybrid events include: SC22, the International Conference for High Performance Computing, Networking, Storage, and Analysis (Nov 2022 in Dallas, TX); PEARC22 (July 2022 in Boston, MA); PASC23 (June 2023 in Davos, Switzerland); and PPOPP23 (February-March 2023 in Montreal, Canada).

SIGHPC provides students and early career travel grants to all sponsored conferences. At SC22 and at SC23, SIGHPC provided travel grant support for all participants in the ACM Student Research Competition.

In addition to the SIGHPC-sponsored conferences, our membership coordinator attended the CRA-WP Conference in San Francisco and represented SIGHPC at the complimentary booth that came along with our sponsorship. The SIGHPC Chair also happened to attend as a guest speaker and we were able to set up a nice presence at the conference and network with many young women planning to further their careers and education in computing.

## **Programs**

Our virtual chapters program provides a way for different sub-groups in our community to interact and share information. Virtual chapters are especially relevant in HPC because of the nature of our community: because of their costs, HPC centers are not densely distributed throughout any single state or region. This results in a global HPC community that is highly distributed and in general not regionally connected, and so meetups and other community-oriented activities are not practical. Two chapters recently went into a probationary period, others are engaged and quite active. A new chapter with South and Latin American leadership was also formed this year.

- SIGHPC ASCAN: this chapter promotes study of accelerated scalable computing and analytics.
- SIGHPC Education: this chapter targets aspects of teaching HPC, developing educational or training materials, and curriculum development.
- SIGHPC SYSPROS: the Systems Professionals chapter supports the interests and needs of systems administrators, developers, engineers, and other professionals involved or interested in the operation and support of systems for high performance computing.
- (NEW!) SIGHPC Computing Continuum: Focusing on efforts from edge to cloud computing that are happening in Latin America. Membership is not restricted to Latin America but the chapter will provide a platform to converge on major ongoing efforts.

Additional programs include the HPC Immersion (HPCI) program discussed in the DEI section, We are hoping to expand on

## **Key Issues**

The SIG will continue to be challenged to increase value for non-US participants over the next several years, principally through relationships with workshops and conferences outside the US. There is some indication that this is improving, especially in Latin America, where interest in a new chapter is high.

HPC, along with all of the computer science-related disciplines, suffers from a lack of diversity in its workforce. The SIG will continue its efforts to support groups that are under-represented in computing -- such as women, black and African Americans, Native Americans, and Hispanic and Latino groups -- through its fellowship, travel support, and award programs. However, we must carefully evaluate the impact of those programs and continue to experiment with new ways to address this critical need.

Over the next year we are also looking for ways to engage students and early career members, possibly through mentoring programs, and to better engage our chapters in the broader SIGHPC community through joint workshops, promotions, and webinars.

**SIGMETRICS FY'23 Annual Report**  
**July 2022 – June 2023**  
**Submitted by: Mor Harchol-Balter, SIGMETRICS Chair**

ACM SIGMETRICS brings together researchers and practitioners in the area of performance evaluation of computer systems and networks. The SIG promotes research in performance analysis techniques as well as the advanced and innovative use of known methods and tools to understand and improve performance and quality of service, seeking a balance between theoretical and practical issues.

SIGMETRICS concluded a very active and exciting year, which featured several activities to meet the needs of its membership. Some of the highlights for the year were as follows.

**Awards:**

- The SIGMETRICS Achievement Award was awarded to Dr. Laurent Massoulié of Inria in recognition of his outstanding contributions to the theory and practice of large-scale distributed networks and systems.
- The SIGMETRICS Rising Star Research Award was awarded to Dr. Weina Wangi of Carnegie Mellon University for the development of new mathematical tools and algorithms that significantly deepen our understanding of the performance of complex, heterogeneous stochastic systems.
- The SIGMETRICS Test of Time Award was presented to Myunghwan Kim, Roshan Sumbaly, Sam Shah, for their work "Root Cause Detection in a Service-Oriented Architecture", published in the Proceedings of ACM SIGMETRICS 2013. This work proposes MonitorRank, a system for identifying the root causes of anomalies in service-oriented architectures (e.g. LinkedIn). When called upon to investigate an anomaly, MonitorRank provides in real-time a rank-ordered list of its possible root causes. To this end, MonitorRank performs a weighted PageRank algorithm on an API call graph (linking together anomaly sensors) whose edge weights are learned offline in an unsupervised manner from historical anomaly sensor data.
- The 2023 ACM SIGMETRICS Best Paper Award was awarded to the paper "Mean-field Analysis for Load Balancing on Spatial Graphs" by Daan Rutten and Debankur Mukherjee of Georgia Institute of Technology.
- The Kenneth C. Sevcik Best Student Paper Award went to "Overcoming the Long Horizon Barrier for Sample-Efficient Reinforcement Learning with Latent Low-Rank Structure" by Tyler Sam (Cornell University), Yudong Chen (University of Wisconsin-Madison) and Christina Lee Yu (Cornell University).

**Conference and Workshops:**

This edition of SIGMETRICS, co-located in Orlando with ACM FCRC 2023, was the first one to return to an in-person event only since the start of the pandemic. The event saw strong participation from the community, with over 190 registered attendees, and a record of student participation from national institutions and overseas. The main conference papers were published as usual on the ACM digital library and, although no virtual presentation was held, the papers are still accompanied by free videos released on the ACM and SIG's youtube channels.

SIGMETRICS continued to offer this year a soft-tracking model, whereby authors could specify at submission time a paper as falling in one of four thematic categories (learning, measurement & applied modeling, systems, and theory). The number of submissions was at a historically high value this year, with 342 submissions across the three deadlines and a competitive acceptance rate below 16%.

The conference also grew in terms of the number of co-located workshops, which went from four to six. This year the selection of workshops included: MAMA 2023 - International workshop on MATHematical performance Modeling and Analysis; Teaching Performance Analysis of Computer Systems (TeaPACS); Causal Inference for Engineers; Learning-augmented Algorithms: Theory and Applications; Quantum Systems and Computation; Measurements for Self-Driving Networks.

SIGMETRICS also partners with SIGSOFT and SPEC as technical sponsors of the ICPE conference, and together with IEEE in IWQoS, as well as with SIGCOMM and other SIGs in cosponsoring IMC and SenSys.

### **Papers on emerging and new areas of performance analysis, measurement and modeling:**

Research published in SIGMETRICS typically focuses on performance evaluation of computer systems and networks. Technical areas of interest to the community include, but are not limited to, network performance, load balancing, systems, pricing, queueing, workload optimization, caching, control and resource allocation, memory, forecasting, graph analysis, and learning.

The ACM SIGMETRICS 2023 conference accepted several papers on the areas listed above and also featured work on exciting topics of increasing applied and theoretical interest, we mention in particular the best paper and best student paper award papers:

- Best paper award: "Mean-field Analysis for Load Balancing on Spatial Graphs" by Daan Rutten and Debankur Mukherjee of Georgia Institute of Technology. The paper investigates the analysis of large-scale, parallel-server load balancing systems that has relied heavily on mean-field analysis. An emerging line of research on this problem considers load balancing algorithms on bipartite graphs where vertices in the two partitions represent the task types and servers, respectively, and an edge represents the server's ability to process the corresponding task type. In this paper, the authors consider the power-of-d choices algorithm and develop a novel coupling-based approach to establish mean-field approximation for a large class of graphs that includes spatial graphs.
- Kenneth C. Sevcik best student paper award: "Overcoming the Long Horizon Barrier for Sample-Efficient Reinforcement Learning with Latent Low-Rank Structure" by Tyler Sam (Cornell University), Yudong Chen (University of Wisconsin-Madison) and Christina Lee Yu (Cornell University). The practicality of reinforcement learning algorithms has been limited due to poor scaling with respect to the problem size. In this paper, the authors consider a class of MDPs for which the associated optimal  $Q^*$  function is low rank, where the latent features are unknown. The authors investigate Low Rank Monte Carlo Policy Iteration (LR-MCPI) and Low Rank Empirical Value Iteration (LR-EVI) that result in lower complexity for reinforcement learning also under long time horizons.

## **Diversity, Equity, and Inclusion:**

Several activities in the SIG have been taken to broaden participation to foster equality and be more inclusive in the categories of community members we recognize via awards or service roles:

- We have introduced for the first time the ACM SIGMETRICS Dissertation Award, which will recognize outstanding doctoral dissertations in the areas covered by the SIG.
- We have continued the new practice of issuing a Call for Hosting. SIG planning is now scheduled up to 2025.
- We have integrated into our processes the new ACM Violations Database to ensure alignment with ACM best practices in terms of professional behavior and ethics.
- SIGMETRICS has also recently modified the call for papers of its main conference to include DEI considerations, such as accessibility guidelines for the authors to be more inclusive in the language they use in the papers. Instructions were also provided to the session chairs to ensure good handling of the session presentations with respect to DEI.

## **Key issues for the next 2-3 years:**

- Following the recent election results, the newly-elected Chair and Executive Committee will revise and improve community governance by leveraging the baseline processes established by the previous SIGMETRICS boards, such as the composition of a Conference Advisory Committee to provide support and advice to general chairs and program chairs in their day-to-day operations. Documentation to persist and update the best practices is being revised. Below are some additional goals of the new Executive Committee.
- Better housekeeping to aid in getting more support from industry: To help our SIG obtain more funding from industry, we are embarking on a process to produce detailed statistics about all involvement of companies at SIGMETRICS over the past 10 years. This includes industry people who served on the TPC, who gave keynotes, who won awards, who ran workshops, who served on the organizing committee, etc. Within the next year, we hope to have such a list for every company that has funded SIGMETRICS. We are also tracking the amount of funding that the company has provided every year for the last 10 years.
- A home for SIGMETRICS within NSF: A major issue for people in the SIGMETRICS community is that there is no NSF program tailored to supporting SIGMETRICS researchers, specifically people working on stochastic modeling of computer systems. We have started discussions with a group of NSF officers who are sympathetic to our situation. Our goal is to try to find a home program within NSF over the next 3 years. The first step appears to be running an NSF workshop.
- Implement the new ACM publications policy, especially in relation to the new provisions on Large Language Models such as ChatGPT and monitor author compliance.
- Strengthen the community governance in relation to industrial funding, developing guides and materials to help create a stable sponsorship ecosystem around our flagship conference.

**Other Issues:** N/A

**SIGMICRO Annual Report**  
**July 1, 2022 and June 30, 2023**  
**Submitted By: Onur Mutlu, Chair**

**1. Comment on the ways in which the SIG is a healthy and viable organization**

SIGMICRO is quite healthy in terms of its conferences (and their impact), finances, and membership. MICRO (<https://www.microarch.org/>), which is celebrating its 56th incarnation in 2023, is considered a premiere conference in computer architecture, microarchitecture and hardware/software interfaces, continuing its flagship role in the community. It is our flagship activity and its impact and participation keeps growing, with paper submission counts continuously over 400 (more than 420 in 2023) and participation over 600 especially in most recent incarnations. Accepted papers have also been growing to more than 80-90 in recent incarnations and more than 100 in 2023.

The MICRO Test of Time Award (<https://www.microarch.org/tot/>) recognizes some of the highly-influential works that were published at MICRO and the works that have won the award attest to the impact MICRO has had in the microarchitecture and computer architecture research and products in the world.

Elections are healthy and held on time. Volunteers are also highly-active participants and researchers in the community. Elections in 2023 created a healthy new set of energetic executive board, which has held its kickoff meeting recently.

Our newsletters, news and activities are frequently communicated to our membership and the world via our website and social media channels. We actively support student participation and health, especially via our recognition and support for the Computer Architecture Student Association (<https://twitter.com/comparchsa>) in its activities. Other support we provide is described below under answers to the remaining questions.

In addition, we note the following activities:

- We have eliminated the membership fee for students and reduced it to only \$5 for professional members, to enable better accessibility to a diverse community and include students and more and more diverse members as much as possible.
- We have created two brand new awards (SIGMICRO Early Career Award and SIGMICRO Dissertation Award). The inaugural recipients of these awards will be selected in 2023 and the selection process is currently taking place following best practices and ACM Conflict of Interest rules.
- We have supported student travel grants for the MICRO-55 conference in 2022 (in the amount of 20K USD).
- We continuously support a wide variety of diversity, equity, inclusion, and student and mentoring activities (as described in more detail below)
- We provide news and information on a more frequent basis via our website (<https://www.sigmicro.org/>), Twitter channel (<https://twitter.com/acmsigmicro>) and new LinkedIn channel (<https://www.linkedin.com/company/74541644/>). We have revamped our website in 2021 to become much more streamlined and have been adding significant content since then.

- We communicate information about MICRO and the MICRO Test of Time Award further via their respective websites (<https://www.microarch.org/> and <https://www.microarch.org/tot/>), managed by the SIGMICRO Information Director.
- We hold an annual SIGMICRO meeting to communicate with our membership in the Business Meeting associated with the MICRO conference. This meeting provides updates on SIGMICRO status and activities to the membership, gathers feedback, and enables in-person engagement and communication with our membership.
- We hold monthly SIGMICRO Executive Committee meetings.

## **2. Describe your efforts related to Diversity, Equity, and Inclusion.**

SIGMICRO has at least four major activities to support and foster diversity, equity and inclusion.

First, we strongly support student (especially underrepresented student) participation and mentoring activities in our flagship conference, MICRO. In particular, we help with travel grants and organization of career workshops. For example, we have supported student travel grants for the MICRO-55 conference in 2022 (in the amount of 20K USD). In the MICRO-56 conference in 2023, we also plan to support the organization of the PhD Forum, which will be organized for the first time (<https://microarch.org/micro56/submit/PhDForum.php>).

Second, we strongly support the SIGARCH/SIGMICRO CARES (Committee to Aid REporting on discrimination and haraSsment policy violations; <https://www.sigarch.org/benefit/cares/>). From the CARES Annual Report: “Since its inception, CARES has played the role of serving as a resource to help persons who experience discrimination or harassment at SIGARCH/SIGMICRO events by serving as a sounding board for such persons and providing advice on the steps necessary to have the matter further investigated by ACM.” CARES Members are present and active at the MICRO conference and they deliver an annual report both in writing as well as in presentation form in the SIGMICRO Annual Meeting at the MICRO Conference (last presentation happened at MICRO-55 in October 2022). The CARES committee members who rotated out were honored by a joint certificate from SIGMICRO and SIGARCH at ISCA conference.

Third, we strongly support the activities of the Computer Architecture Student Association (<https://twitter.com/comparchsa>), providing them a platform at the SIGMICRO Annual Meeting at the MICRO Conference and otherwise helping with any requests they may have. CASA has started a Summer Reading Group in 2022, which is an ongoing series of readings and discussions on advancing diversity, equity, and inclusion (DEI) in the community (and anyone is welcome to participate). CASA organizes and supports various events at the MICRO conference and provides many useful mentoring and networking opportunities to students in our community.

Fourth, SIGMICRO sponsors and supports the Career Workshop for Inclusion and Diversity in Computer Architecture (<https://www.colorado.edu/conference/cwwmca/>), which will celebrate its 8th incarnation this year at the MICRO Conference. The MICRO Career Workshop (formerly CWWMCA) brings together diverse members of the computer architecture community at different levels in academia, industry, research, government, and

students to promote the recruitment, retention and progression of women and underrepresented groups with research interests in computer architecture. The workshop highlights emerging and hot topics in computer architecture, but also provides opportunities for cross-disciplinary research, networking, and career advice and mentoring. The workshop contains a mix of technical presentations and panel sessions given by academic and industry leaders as well as informal activities to provide mentoring for students as they get started in their careers.

### 3. Provide a list of awards and recipients

We created, in 2022-2023, two brand new awards (SIGMICRO Early Career Award and SIGMICRO Dissertation Award). The inaugural recipients of these awards will be selected in 2023 and the selection process is currently taking place following best practices and ACM Conflict of Interest rules. More information is available in the respective webpages for the awards:

SIGMICRO Early Career Award (<https://www.sigmicro.org/awards/earlycareer.php>)

SIGMICRO Dissertation Award (<https://www.sigmicro.org/awards/dissertation.php>)

SIGMICRO Distinguished Service Award (<https://www.sigmicro.org/awards/dsa.php>) is presented to an individual who has contributed important service to the processor microarchitecture and microsystems community while also serving as an active member of SIGMICRO who has contributed (or is contributing) significantly to SIGMICRO organization and/or SIGMICRO-sponsored conference committees. The 2021 recipient of the award was Dr. Pradip Bose from IBM Research. The 2022 recipient of the award was Prof. Wen-mei Hwu from the University of Illinois & NVIDIA.

MICRO Test of Time Award (<https://www.microarch.org/tot/>) is a major award that SIGMICRO helps the MICRO Steering Committee in organizing. Many papers that revolutionized or greatly advanced computer design (published at the MICRO conference) received this award. The following two papers were awarded the eighth MICRO Test of Time Award in 2022. These papers were selected from among all the 156 eligible papers published in MICRO conferences that were held between 2000 and 2004 (inclusive).

Conference	Paper Title	Authors
MICRO 2003	A Systematic Methodology to Compute the Architectural Vulnerability Factors for a High-Performance Microprocessor	Shubhendu S. Mukherjee, Christopher T. Weaver, Joel S. Emer, Steven K. Reinhardt, Todd M. Austin
MICRO 2003	Runtime Power Monitoring in High-End Processors: Methodology and Empirical Data	Canturk Isci, Margaret Martonosi

### 4. List significant papers on new areas that were published in proceedings

Our sponsored conferences continue publishing cutting-edge papers on new areas as well as old areas. A list of their proceedings can be reached from under “Events” in the SIGMICRO page (<https://www.sigmicro.org/>). In particular, the MICRO-55 program is readily available here and includes many significant works, including a Best Paper Session: <https://microarch.org/micro55/program/index.php>

MICRO has been growing in terms of diversity of topic areas as well as authorship. It has also been growing in the number of papers published, especially in 2023.

The following, copied from the Program Chairs’ Message published in the proceedings of 2021, describes the significant technical activity at MICRO: “The program showcases the continued growth and energy in our field with a record number of papers accepted. The program reflects the expanding interest of the community with roughly half the program covering important topics such as security and privacy, quantum computing and domain specific acceleration (e.g., machine learning, graph processing). The program also demonstrates the importance of synergy between architecture and software and also includes conventional paper topics that continue to enhance the state-of-the-art in CPUs, GPUs, and memory/storage hierarchy by improving any combination of performance, energy, and/or reliability.”

The following quotes are from the CGO 2022 Program Chairs’ message:

“This year the conference attracted 99 submissions, 12 of which were Tools and Practical Experience papers. Based on the critical reviews of the Program Committee and subsequent online discussions, 27 high-quality research papers were accepted, with an acceptance rate of 27%. Four of the accepted papers were Tools and Practical Experience papers. The accepted papers cover a diverse range of topics with several papers having both industry and university co-authors.

The final program includes papers that focus on traditional topics such as compiler infrastructures and intermediate representations, compiler correctness, program analysis and optimization, parallelism, DSLs, as well as new topics such as ML approaches to code optimization problems, optimizations for code originating from ML tasks, performance modeling, natural language based synthesis, and more!”

CGO 2022 and 2023 final programs, including the Best Paper Award, can be found here:

<https://conf.researchr.org/program/cgo-2022/program-cgo-2022/>

<https://conf.researchr.org/program/cgo-2023/program-cgo-2023/>

The following quotes are from the CF 2022 Program Chairs’ message:

“Out of the 68 submissions, we accepted only 18 works as full papers and 6 works as short papers for publication and presentation to the conference, and 1 work as a poster. For all papers an artifact evaluation process was made available. Additional 10 posters were selected by the poster co-chairs on a dedicated call for paper.

The technical program this year contains a broad spectrum of topics: quantum computing, neuromorphic computing, computer and accelerator architecture, compilers, runtime-systems, application optimization, applications of machine learning and artificial intelligence on computing, distributed and edge computing, security, energy-efficiency and others.”

CF 2022 and 2023 final programs are accessible here:

<https://www.computingfrontiers.org/2022/program.html>

<https://www.computingfrontiers.org/2023/program.html>

## **5. Describe conference activity**

MICRO conference (<https://www.microarch.org/>) is the flagship event sponsored by SIGMICRO. MICRO celebrated its 55th year in 2022. It was held in Chicago after two years of virtual conferences. It is growing in terms of attendance, submissions and impact. This 55th incarnation also introduced the 2nd year of Artifact Evaluation (<https://microarch.org/micro55/submit/artifacts.php>), to encourage open science. As stated by prior Program Chairs, "Artifact Evaluation promotes reproducibility of experimental results and encourages code and data sharing to help the community quickly validate and compare alternative approaches." Both the conference program and artifact evaluation process have been deemed very successful.

MICRO-56 will be held in Toronto, between October 28 and November 1, 2023.

SIGMICRO also sponsors (at 45%) a younger conference, CGO, which is the top conference in code optimization. CGO is considered prestigious and has been awarding its own Test of Time Award. CGO also conducts an Artifact Evaluation process, which is quite healthy and respected.

We also sponsor (at 100%) a forward-looking conference, Computing Frontiers, which enables easier expression and publication of non-traditional ideas in computer architecture, which celebrated its 20th year in 2023, and included a celebratory session for this important anniversary. CF also conducts an Artifact Evaluation process.

We also sponsor ESWEEK at a much smaller percentage (10%).

All conferences we sponsor are quite healthy in terms of organization, papers, attendance, submissions and impact.

Most recent incarnations of these conferences for this annual report year can be found here:

MICRO 2022: <https://microarch.org/micro55/index.php>

CGO 2023: <https://conf.researchr.org/home/cgo-2023>

CF 2023: <https://www.computingfrontiers.org/2023/>

ESWEEK 2022: <https://esweek.org/>

## **6. Comment on special projects and non-conference programs that provided service to some part of your technical community**

Please see our DEI efforts under question #2.

We focus on extending membership to students via the MICRO conference. The students and the community in general are encouraged to serve as volunteers. We support our younger members by enabling them to develop and implement new ideas like new workshops or educational materials or new initiatives like the Computer Architecture Student Association.

**7. A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.**

We could always do better in terms of increasing and diversifying our membership. The size of our member base, although healthy, certainly does not reflect the attendance trends at MICRO and CGO (as well as other conferences we sponsor, like CF). We are working on this by getting more students signed up (e.g., free membership for students, enacted last year) and creating new awards (e.g., the two new awards enabled in 2022-2023) and mentoring and educational initiatives for students and members. 2020 and 2021 were both tough years due to the COVID-19 crisis in terms of our outreach efforts for membership. The in-person MICRO conference in October 2022 has enabled us to re-invigorate our membership through in-person interactions and presence.

We also aim to also extend and diversify our volunteer base by creating new volunteer positions in SIGMICRO in 2023. We already created Awards Chair and Information Director positions. We are in the process of creating Diversity Chair, Outreach Chair and Education Chair positions as well as some others.

Finally, the SIGMICRO Early Career Award and SIGMICRO Dissertation Award will be finding their inaugural recipients this year. We believe more awards, especially those targeted towards younger members of our community, can be helpful.

**SIGMIS Annual Report  
July 2022 - June 2023  
Submitted by: Damien Joseph SIG Chair**

**1. Comment on the ways in which the SIG is a healthy and viable organization**

We were able to have a hybrid conference in Pomona, CA in June 2023. There were 42 face-to-face participants and 2 members participated virtually. We had 4 doctoral students participate in the day long doctoral consortium – 2 were face-to-face and 2 were virtual. We were pleased with the conference participation. We retain a core group of active and contributing members and a nucleus of strong and continuing programs.

We have new members joining from Germany, the US, the Middle East, Asia, and South America.

In 2022, The DATA BASE for the Advances in Information Systems (our SIG publication) received 74 submissions from 17 different countries across the globe. A total of 21 manuscripts were accepted for publication, and 170 different reviewers assisted with the editorial process.

**2. Describe your efforts related to Diversity, Equity, and Inclusion.**

Doctoral student participants in the conference consortium were from the United States and from Malaysia. The executive leadership team consists of individuals from Singapore, Bolivia, and the US.

Additionally, authors for this year's conference papers were very diverse, from Bolivia, Brazil, Canada, Finland, Germany, Italy, Kingdom of Saudi Arabia, Singapore, and the US.

Eleven of the papers presented at the conference focused on DEI topics, and the best paper award went to a paper on neurodiversity.

Additionally, our gender diversity is strong as two of the three elected officials of SIGMIS are women.

**3. Awards Given**

**SIGMIS Lifetime Achievement Award:**

This year the SIGMIS Lifetime Achievement award was presented to **Dr. Lorne Ofiman**. Lorne is an Emeritus Professor and former Director of the Center for Information Systems and Technology at Claremont Graduate University (CGU). This represents the fifth time the SIG has presented the award. The award was presented at our conference in June. The announcement has been posted to our website (<https://sigmis.org/awards-and-grants/sigmis-lifetime-achievement-award/>).

**SIGMIS Early Career Award:**

This year the SIGMIS Early Career Award was presented to Dr. Dongwon Lee, an Assistant Professor at the Hong Kong University of Science and Technology. Dongwon received his Ph.D. in Information Systems from the Robert H. Smith School of Business at

the University of Maryland. His research interests include mobile commerce, customer analytics, digital nudging, digital transformation, and platform/protocol economy.

**SIGMIS CPR Conference Awards:**

- **2022 Magid Igbaria Outstanding Conference Paper of the Year Award Recipients**

Ronnie Jia (Illinois State University) and Heather Jia (Illinois State University).  
Understanding Employee Emotional Dissonance and Work Exhaustion Through the Lens of Neurodiversity

**The DATABASE for Advances in Information Systems  
Annual awards, Vol. 52.**

**Best Paper:**

Mikko Siponen, Wael Soliman, and Anthony Vance. 2022. Common Misunderstandings of Deterrence Theory in Information Systems Research and Future Research Directions. *The DATABASE for Advances in Information Systems*, 53, 1 (February 2022), 25–60. <https://doi.org/10.1145/3514097.3514101>

**Best Senior Editor:** Joseph Taylor, California State University, Sacramento

Joseph Taylor has demonstrated versatility, consistency, and excellence in his work as a Senior Editor. He has consistently managed a heavy load of papers while handling a wide array of research topics. His willingness to take on challenging assignments and his ability to provide developmental reviews in a timeline manner make him an invaluable member of our editorial team. His commitment to this journal is reflected in taking on papers in areas where it may be difficult to find suitable Senior Editors.

**Best Reviewer:** Sampath Bengal, University of New Brunswick

Sampath Bengal's reviews are exceptional, implementing a mentorship-like approach. He exhibits invaluable insights, attention to detail, and a commitment to constructive criticism, leading to a positive experience for the authors and the editor. Sampath's thorough reviews provide authors with invaluable feedback to improve the overall quality of their work. Another exceptional quality of Sampath is his punctuality and dependability. He consistently exceeds the deadline to submit his review, enabling a smooth and efficient publication journey for the authors. Sampath Bengal is well deserving of being the 2022 Best Reviewer as he is setting a benchmark for excellence in the peer review process.

**Runner-up to best reviewer:** Yao Shi, University of North Carolina Wilmington

Yao Shi excels in timely, speedy, and high-volume reviews. Yao Shi consistently submits reviews punctually, while maintaining quality. The rapid yet comprehensive evaluations benefit both authors and the journal publication timeline.

The editors-in-chief would like to thank all our senior editors, reviewers, and authors – without whom we could not produce the quality and innovation that our readership has come to expect. It is with much gratitude that we look forward to another year of *The DATABASE for Advances in Information Systems*.

**4. List significant papers on new areas that were published in proceedings**

*Title Examining the impact of digital open innovation platforms on social power dynamics in smart municipalities.*

Authors: Timon Sengewald, Tim Posselt, and Manuel Riemer

SIGMIS-CPR'23: Proceedings of the 2023 on Computers and People Research Conference

June 2023

Note: Proceedings are forthcoming on ACM Digital Library.

*Title Genie breaks the bottle: Ethics in artificial intelligence adoption*

Authors: Shuyuan Mary Ho and Yue Liu

SIGMIS-CPR'23: Proceedings of the 2023 on Computers and People Research Conference

June 2023

Note: Proceedings are forthcoming on ACM Digital Library.

## **5. Describe conference activity**

The 2023 conference was held in Pomona, CA. The theme of this year's conference was "Preparing IT workforce for new organizational and societal challenges." The conference received a total of 31 submissions (Full research papers: 14; Research-in-progress papers: 9; Posters: 6; Panels: 2). Of these, 25 submissions were accepted for the program (Full research papers: 11; Research-in-progress papers: 7; Posters: 5; Panels: 2), a 78% acceptance rate. The final totals for the conference include 24 submissions programed, 60 reviews conducted, and 56 unique authors represented in the program.

The doctoral consortium consisted of 4 research-in-progress papers being presented by students with six faculty mentors participating. We also had sponsorship from Prospect Press, Computer Information Systems Department (College of Business, California Polytechnic State University, Pomona), Department of Information Systems & Analytics (Jones College of Business, Middle State Tennessee University, Murfreesboro), and support from the publishers for the conference and new initiatives for increasing the revenue stream and exposure of the SIG.

## **6. Comment on special projects and non-conference programs that provided service to some part of your technical community**

### **Research grant award 2022**

The grant was awarded to:

- Timon Sengewald (ACM SIGMIS Member, FAU Erlangen-Nürnberg, Germany)
- Tim Posselt – FAU Erlangen-Nürnberg, Germany
- Manuel Riemer – Wilfrid Laurier University, Canada

Their proposed research seeks to explore how the design of an open innovation platform may foster or hinder social power for specific marginalized resident groups who have different capacities in using the platform.

### **ICIS community involvement**

We co-sponsored the ICIS conference held in Copenhagen, Denmark, in December 2022, where we supported the best doctoral dissertation in information systems award and

staffed a booth to promote our publication, DATABASE, and to invite ICIS conference participants to join ACM-SIGMIS. Cindy Riemenschneider attended, made a presentation, and distributed various materials, including ACM SIGMIS notepads, at the doctoral consortium closing dinner. She focused on the benefits of participating in ACM SIGMIS-CPR in her presentation.

Nancy Deng, Damien Joseph, Sam Zaza, Deb Armstrong, and Cindy Riemenschneider staffed the booth for ACM SIGMIS-CPR/DATABASE and distributed materials for the conference and journal. Additionally, these members answered questions about the publication and membership in ACM-SIGMIS, enhancing the visibility of the journal and the SIG.

## **7. A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.**

### **Finances**

The funding model for SIGMIS-CPR may require additional resources through organizational sponsorships or possibly through other creative solutions. Considering the 2022 increase in the payment to the ACM offices for overhead, personnel, conference support, etc. and the modest revenue from the digital library, the current surplus of funds will not be sustainable. Over the last six years, the SIG implemented new initiatives and has wisely allocated funds to those initiatives increasing visibility, awards, and the impact factor for our newsletter. However, at some point the current investments will need to be used, at least in part, to enhance current revenue streams or create new ones. We currently have a good amount of funds available for continued investment, but in the long run this will need to be of concern to the SIG leadership. Creative solutions for conference venues may also need to be found.

### **The DATABASE for Advances in Information Systems**

Our publication, *The DATABASE for Advances in Information Systems*, continues a concerted marketing campaign of research conference visibility focused on impact and intellectual innovation. We have distributed four issues regularly for many years, and continued to do the same in 2022. Thomas F. Stafford, Ph.D., Editor Emeritus, completed his term at the end of 2022. K. D. Joshi started her term as the Editor in Chief (EIC) in January 2022. Nancy Deng started to serve as co-EIC in September 2022.

Starting from February 2024 (Volume 55, Issue 1), *The DATABASE for Advances in Information Systems* will no longer be distributed in hardcopy format; it will be delivered electronically. In addition to the major cost savings from printing hardcopies and postage, this direction is aligned with ACM's sustainability initiatives. The ACM and SIGMIS/CPR members can access the publication for free through the ACM Digital Library.

### **Social Media and Communications:**

SIGMIS has a Facebook page (<https://www.facebook.com/acmsigmis>), a LinkedIn profile (<https://www.linkedin.com/groups/5148399>), and a Twitter account (<https://twitter.com/acmsigmis>).

We are forming a Communications Committee in 2023 to assist with increasing the visibility of the SIG.

### **Upcoming SIGMIS Conferences:**

We have begun the planning for the 2024 conference as a face-to-face conference in Middle Tennessee State University, Murfreesboro, USA. Sam Zaza and Cindy Riemenschneider will serve as the conference co-chairs. The 2025 conference will be held in Baylor University, Waco, Texas. Using a university facility should decrease the expenses for the conference and allow the conference to bring in more revenue to the SIG. Cindy Riemenschneider will serve as one of the conference co-chairs for 2025.

### **Collaborations:**

SIGMIS continues to be in-cooperation program with other groups seeking our support relative to their conferences. It turns out there are a much larger number than expected of requests in this area and we want to redesign our approach. It takes some effort to evaluate each of these in detail and decide whether our support is warranted as well as how to generate more benefit to our members. It will be advantageous if we can exploit these connections for mutual advertisements of these conferences to our members and our CPR conference to their members.

SIGMIS was in cooperation with the following 11 conferences:

1. International Conference on Computer-Human Interaction Research and Application
2. International Conference on Cloud Computing and Service Science
3. International Conference on Computer Supported Education
4. International Conference on Data Science, Technology and Applications
5. International Conference on Evaluation of Novel Approaches to Software Engineering
6. International Conference on Finance, Economics, Management, and IT Business
7. International Conference on Health Informatics
8. International Conference on e-Business
9. International Conference on Enterprise Information Systems
10. International Conference on Information and knowledge Systems
11. International Conference on Information Systems
12. Brazilian Symposium on Information Systems

We continue seeking out collaborations with AIS special interest groups particularly regarding leadership and diversity/inclusion. The strategy is to make focused events and activities of interest to ACM SIGMIS members available before or during all major MIS conferences – ICIS, HICSS, AMCIS, ECIS, and PACIS – as well as our own standalone conference. This is slower going than expected but I anticipate will continue to grow over the next few years.

### **Strategic Focus:**

We welcome for both the conference and publication a wide range of MIS topical areas including ethics, all aspects of work, and IS entrepreneurship. IS personnel issues continue to be a primary focus of our conference and newsletter, especially considering the prevalence of telework, the covid issues, and considerations of what IS work will be in the future.

Based on the direction of the executive committee, two new committees are being formed in 2023. These include a Research Portfolio Committee and a Communication Committee.

**Research Portfolio Committee** – This is a new committee. The purpose of this committee is to advocate, coordinate, and administer the various research and research awards of the SIG. Specifically, the objectives of this committee are:

1. To conduct an active advocacy program to promote and support MIS research.
2. To provide advice and support in the planning of ACM SIGMIS CPR
3. To administer the annual ACM SIGMIS Research Grant
4. To administer the annual awards sponsored by ACM SIGMIS.

Damien Joseph is chairing this committee.

**Communication Committee** - This is a new committee. This committee aims to raise awareness and visibility of the ACM SIGMIS activities among the information systems community internationally in a consistent way. Specifically, the objectives of this committee are:

1. To develop a strategic communication plan and structure
2. To promote ACM SIGMIS activities through frequent and regular communication via digital channels, including social media.

Indira Guzman is chairing this committee.

## **ELECTIONS:**

No elections were held as the officers are continuing to serve through June 30, 2024.

**SIGMM Annual Report year 2023**  
July 1, 2022 to June 30, 2023  
Prepared by SIGMM Chair Alberto Del Bimbo

**SIGMM MISSION**

SIGMM provides an international interdisciplinary forum for researchers, engineers, and practitioners in all aspects of multimedia computing, communication, storage, and application.

**SIGMM AWARDS**

In 2022 SIGMM gave out four awards at ACM Multimedia 2022:

o **SIGMM Award for Outstanding Technical Contributions to Multimedia Computing, Communications and Applications**

ACM SIGMM presents every year this award to a researcher who has made significant and lasting contributions to multimedia computing, communication and applications. The award recognizes members of the community for long-term technical accomplishments or those who have made a notable impact through a significant technical innovation. The selection committee focuses on candidates' contributions as judged by innovative ideas, influence in the community, and/or the technical/social impact resulting from their work. The SIGMM Technical Achievement Award Committee was: Phoebe Chen (Chair), Jiebo Luo (non-voting), John R. Smith, Mubarak Shah, Alberto Del Bimbo, Miriam Redi

The recipient was Prof. Alan Smeaton *in recognition of his outstanding, pioneering, and continued research contributions in the areas of multimedia information analysis and management, and for outstanding and continued service to the multimedia community.*

o **SIGMM Rising Star Award**

ACM SIGMM presents every year this award recognizing a young researcher - an individual either no older than 35 or within 7 years of PhD - who has made outstanding research contributions to the field of multimedia computing, communication, and applications during this early part of his or her career.

The SIGMM Rising Star Award Committee was: Phoebe Chen (Chair), Jiebo Luo, John R. Smith, Mubarak Shah, Alberto Del Bimbo, Miriam Redi.

The recipient was Jianlong Fu *for his significant contributions in Multimedia Search and Mining.*

o **SIGMM Award for Outstanding PhD Thesis in Multimedia Computing, Communications and Applications**

ACM SIGMM presents every year this award to a researcher whose PhD thesis has the potential of very high impact in multimedia computing, communication, and applications, or gives direct evidence of such impact.

The SIGMM Award for Outstanding PhD Thesis Committee was: Phoebe Chen (Chair), Alberto Del Bimbo, Miriam Redi, Tat-Seng Chua, John R. Smith, Mubarak Shah.

The recipient was Zhengyuan Yang for the thesis entitled "*Visual Grounding: Building Crossmodal Visual-text Alignment*" at the University of Rochester.

### o **SIGMM Test of Time Paper Award**

The SIGMM Test of Time Paper Award Committee was: Klara Nahrstedt, Mohan Kankanhalli, Shih-Fu Chang, John R. Smith, Yang Yang.

The overall winners were:

- Jana Machajdik and Allan Hanbury with the paper: *Affective image classification using features inspired by psychology and art theory*, Proceedings of the 18th ACM International Conference on Multimedia, 2010 (in the category *Multimedia Analysis, Retrieval, Query*)

Honorable mentions were given to:

- Saamer Akhshabi, Ali Begen, and Constantine Dovrolis with the paper: *An experimental evaluation of rate-adaptation algorithms in adaptive streaming over http*, Proceedings of the 2nd Annual ACM Conference on Multimedia Systems, MMSys, 2011 (in the category *Multimedia Systems- Networks*)
- Mauro Barni, Tiziano Bianchi, Dario Catalano, Mario Di Raimondo, Ruggero Donida Labati, Pierluigi Failla, Dario Fiore, Riccardo Lazzeretti, Vincenzo Piuri, Fabio Scotti, and Alessandro Piva with the paper: *Privacy-preserving fingerprint authentication*, Proceedings of the 12th ACM Workshop on Multimedia and Security, MM&Sec, 2010 (in the category *Multimedia Security and Privacy*)
- Jörg Müller, Florian Alt, Daniel Michelis, and Albrecht Schmidt with the paper: *Requirements and design space for interactive public displays*, Proceedings of the 18th ACM International Conference on Multimedia, 2010 (in the category *Multimedia Interfaces and Applications*)

### **2022 ACM TOMM Nicholas Georganas Best Paper Award**

At ACM MM'22, SIGMM presented the:

#### **2022 ACM Transactions on Multimedia Computing, Communications and Applications**

**(TOMM) Nicolas D. Georganas Best Paper Award** to the paper: *Smart Director: An Event-Driven Directing System for Live Broadcasting*, by Y. Pan, Y. Chen, Q. Bao, N. Zhang, T. Yao, J. Liu, T. Mei ACM TOMM Volume 17, Issue 4, Novembre 2021, Article No.119

### **SIGMM SPONSORED CONFERENCES**

In 2022-23 SIGMM sponsored 6 conferences fully. Some of them were held as hybrid events. Globally, they received satisfactory attendance, some of them with record number attendees. There was high attention to maintain high scientific quality and fairness in the review process. Summaries of fully sponsored conferences are:

o **ACM Multimedia**

ACMMM'22, Lisboa, Portugal, 10 - 14 October 2022

General Chairs: João Magalhães, Alberto del Bimbo, Shin'ichi Satoh, Nicu Sebe

Program Coordinator: Cees Snoek

Program Chairs: Xavier Alameda-Pineda, Qin Jin, Vincent Oria, Laura Toni

Participants: 1110 (on-site)

Acceptance rate: 27.9% (main track)

o **ACMMM Asia**

ACMMMAsia'22 Tokyo, Japan, December 13 - 16, 2022

General Chairs: Kiyoharu Aizawa, Phoebe Chen, Shuquiang Jiang, Keiji Yanai

Program Chairs: Toshihiko Yamasaki, Jing liu, Winston Hsu, Wei Tsang Ooi, Rei

Kawakami Participants: 214 (onsite: 96 online: 118)

Acceptance rate: 40.3% (global)

o **ACM MMSys**

MMSyS'23, Vancouver, Canada · June 7 - 10, 2023

General Chairs: Mohamed Hefeeda, Shervin Shirmohammadi, Gwendal Simon.

Program

Chairs: Carsten Griwodz , Roger Zimmermann, Mea Wang

Number of Participants: 140 (on-site)

Acceptance Rate: 23.7% (main track)

o **ICMR ACM Multimedia Retrieval**

ICMR'23 12 - 15 June, Thessaloniki, Greece

General Chairs: Ioannis (Yiannis) Kompatsiaris, Jiebo Luo, Nicu Sebe, Angela Yao

Program Chairs: Vasileios Mezaris, Symeon Papadopoulos, Adrian Popescu, Zi

(Helen) Huang Number of Participants: 148 (on-site)

Acceptance Rate: 32,6% (main track)

o **ACM IMX International Conference on Interactive Media Experiences**

IMX'23, June 12-15, Nantes, France

General Chairs: Patrick Le Callet, Matthieu Perreira Da Silva

Program Chairs: Toinon Vigier, Koray Tahiroğlu, Niall Murray

Participants 151 (on-site)

Acceptance rate: 39% (global)

o **ACM MHV Mile High Video**

MHV '23, Denver CO USA, May 7 - 10, 2023

Chair: Ali C. Begen.

General Chairs: Tamar Shoham, Alex Giladi.

Program Co-chairs: Christian Timmerer, Dan Grois

Participants: 234 (on-site)

Acceptance rate: 50% (global)

**SIGNIFICANT PAPERS AT ACMMM'22**

The SIGMM flagship conference, ACM Multimedia 2022 presented the following awards for papers presented at the conference:

o **Best Paper Award** to Liqiang Nie, Leigang Qu, Dai Meng, Min Zhang, Qi Tian, Alberto del Bimbo for the contribution *Search-oriented Micro-video Captioning*

o **Best Student Paper Award** to Mengqi Huang, Zhendong Mao, Penghui Wang, Quan Wang, Yongdong Zhang for the contribution *DSE-GAN: Dynamic Semantic Evolution Generative Adversarial Network for Text-to-Image Generation*

o **Best Demo Award** to Ignacio Reimat, Yanni Mei, Evangelos Alexiou, Jack Jansen, Jie Li, Shishir Subramanyam, Irene Viola, Johan Oomen, Pablo Cesar for the contribution: *Mediascape XR: A cultural heritage experience in Social VR*

o **Best Open Source Award** to Liang Qiao, Hui Jiang, Ying Chen, Can Li, Pengfei Li, Zaisheng Li, Baorui Zou, Dashan Guo, Yingda Xu, Yunlu Xu, Zhazhan Cheng, Yi Niu for the contribution *DavarOCR: A Toolbox for OCR and Multi-Modal Document Understanding*

## **SIGNIFICANT INITIATIVES TO IMPROVE SIGMM ROLE AND BROADEN PARTICIPATION**

In 2022-23 SIGMM continued its effort in supporting attendance for students with particular attention to underrepresented and marginalized countries. For year 2023 SIGMM increased budget allocation for travel support and special projects respectively to 100.000 and 40.000 US\$.

### **o Support for student travel and carer award**

SIGMM provided support for student travel through grants, at all of our SIGMM-sponsored conferences. In 2022 SIGMM rearranged the way student travel grants are awarded by centralizing the process. In order to have full control of the total amount given for travel grants, in 2022 we recommended the committee to allocate budgets to conferences proportionally to the historical conference attendance. Since the SIGMM Student Travel and Carer Award scheme started in 2021 we have offered US\$172,736 to 171 individuals (68 male, 24 Female, 3 prefer not to say, 95 recorded replies) covering 8 SIGMM conferences. This includes 30 awards at ACMM22 Conference (from +50 applicants)

### **o Funding of special initiatives**

In 2022 SIGMM funded the following special projects and events:

o 1-year feasibility study for streaming media extensible reusable open streaming evaluation and benchmarking platform (request by Ali Begen). Funding was delayed to FY23

o Multi-City PhD-School at ACMMM Asia '22 to involve more students and minority attendees with satellite events bringing students from multiple cities

o MediaEval'22 workshop (request by Martha Larsson). Funding was delayed to FY23

- o MMSys'22 travel support of marginalized and underrepresented country non-student participants and panel on "Equality and Diversity" (request by Katrien De Moor)
  - o IMX'22 travel support of marginalized and underrepresented country non-student participants and panel on "Diversity in Metaverse" (request by Mylene Farias)
  - o CBMI'22 [in cooperation conference] Best paper and best student paper award; Music Meets Science cultural event (request by Werner Bailer)
- As in previous years, in 2023 SIGMM had a call for proposals for funding of special initiatives of interest for our community. The following initiatives were funded:
- o 1-year feasibility study for streaming media extensible reusable open streaming evaluation and benchmarking platform (request by Ali Begen)
  - o Spring school on Social XR [independent event] on March 2023 Amsterdam (request by Pablo Cesar)
  - o RAIMM: Robotics AI and MultiMedia Winter School [independent event] on Jan-Mar 2024, Grenoble (request by Xavier Alameda Pineda)
  - o MMSys 23 [ACM sponsored conference] diversity and inclusion initiative Luncheon event and EDIJ workshop (request by Katrien deMoor) June 7-10, 2023 Vancouver
  - o CBMI'23 Int. Conf. on Content-Based Multimedia Indexing [in cooperation conference ] Best student paper award; cultural program "Music Meets Science" event (request by Aladine Chetouani) Sept 2023, Orleans
  - o Medieval'23 workshop [independent workshop ] MediaEval Resource Day Organization Jan 2024 Amsterdam (request by Martha Larsson)

At the same time, we implemented several strategic initiatives for our community:

#### o **Openness at ACMMM**

SIGMM started using Open Review first time with ACMMM 2022 as an experiment to improve the overall quality and reputation of our flagship conference and align it to the most qualified conferences in the area. The Open Review system (<https://openreview.net/>), is increasingly used by many top conferences. Big competitors of ACMMM like ICML and CVPR... use Open Review already (CVPR started this year). After its successful application in ACMMM 2022, we decided to run also ACMMM 2023 using Open Review. We believe that this system has interesting benefits with respect to the past that help to improve both quality and reputation:

a) the review process is exposed to the general public and their comments, in full transparency;

b) reviewers are more committed to making serious reviews and Area Chairs to making motivated decisions. With Open Review we have implemented a double-blind review policy. The reviews of the papers accepted were made public only if both authors and reviewers agree (their agreement was given before the start of the review process). Reviews are maintained anonymously. About 74% of people who submitted at ACMMM23 have been favorable with public reviews.

#### o **SIGMM Retreat**

We decided to have a SIGMM retreat in coincidence with ACM Multimedia in Ottawa. The main goal of the meeting will be strategic. In the past few years, the scenario has changed a lot. Multimedia is ubiquitous. Artificial Intelligence has quickly become central to our research. Multimodal processing is increasingly

available also thanks to large foundational models. New media are progressively becoming popular such as 3D, event data... adding opportunities and complexity for processing and transmission. More and more applications emerge. While this confirms the relevance of our field in the ICT research scenario it also poses interesting challenges. On the one hand, there is a need to reevaluate the representation and coverage of multimedia research topics in our SIGMM-sponsored conferences. On the other hand, we need to address the growing competition in the conference arena as conferences traditionally focused on other research fields are rapidly incorporating multimedia into their programs. Among them, there are some of the top conferences like CVPR and ICCV in computer vision, CHI in humancomputer interaction, SIGCOMM in system and networking....

We invited at the retreat the SIGMM EC Members, the Members of the Steering Committee and the Chairs of ACM Multimedia, the Chairs of the Steering Committees of the other SIGMMsponsored conferences, the ACM TOMM EiC, the past SIGMM Chairs, the big personalities of our community and a few young emerging people. At the retreat we plan to discuss the coverage of our conferences, the new areas that we want to include, how to differentiate our flagship conference from the other conferences while maintaining high ranking and reputation, and how to improve its attractiveness in the future.

#### o **ACM SIGMM Bylaws**

To improve diversity, SIGMM approved a Bylaws revision proposing that “*chair and vice-chair run for the offices in pair*”, a way to encourage diversity without necessarily having to put quota. The ACMMM Steering Committee is actively working on drafting the ACMMM Steering Committee Bylaws to provide clear guidelines to future organizers of the ACMMM Conference in the perspective of alignment of ACMMM to the highest standards of quality.

Other activities have been implemented:

#### o **Social media**

Under the leadership of Pablo Cesar and Silvia Rossi, SIGMM continued the effort in social

media activity encouraging social media interaction at our events where we invite conference attendees to post on social media about papers, demos, talks, etc. that they think are most thought provoking and forward looking at the event. SIGMM successfully continues publication of SIGMM Records including recent developments, announce interesting releases, insights on open -source software and open data, timely updates on the developments in the domain of publicly available multimedia datasets as enabling tools for reproducible research in numerous related areas, opinion-based articles on multidisciplinary aspects of multimedia and interviews, insights, visions, and views from outstanding researchers

#### o **Workshops and meetings**

SIGMM continued the effort to physically co-locate workshops and TPC meetings with conferences, thus saving travel costs and carbon footprint for the community.

### **SIGMM FINANCIALS**

SIGMM flagship conference ACMMM'22 successfully closed the balance with a positive surplus of 130,900.00 US\$, with ACM/SIGMM overhead of 104,571 US\$, thanks to the excellent management of Joao Magalhaes. This compensates the loss in the previous ACMMM edition. Under the leadership of Miriam Redi and Xavier Alameda Pineda it has been prepared a document for the Steering Committees of SIGMM Conferences that will serve as a guide of good practices for the appointed chairs of future conferences. The MHV conference, recently acquired under the SIGMM umbrella has not yet produced satisfactory financial results, despite of good attendance and industry presence. SIGMM is actively working to align this conference to ACM SIGMM standards.

### **ISSUES FOR SIGMM IN THE NEXT 2-3 YEARS**

We believe that SIGMM activity has returned to full normality with effective dissemination of scientific results, training and development of early career researchers, recognition of career progression and achievements. We believe that the Multimedia scenario is rapidly changing and requires quick adaptation of our conferences to the new contest, in order to maintain the status of our flagship conference ACMMM and the attractiveness of the other conferences. This will be done with the implementation of strategic initiatives like Open Review that will grant quality in the review process. More strategic insights about the scope and coverage of our conferences will hopefully emerge from our SIGMM Retreat in Ottawa on October 30.

**SIGMOBILE FY'23 Annual Report**  
**July 2022 – June 2023**  
**Submitted by: Lili Qiu**

The purpose of ACM SIGMOBILE is to promote research and development by bringing together researchers and practitioners and fostering interest in the mobility of systems, users, data, and computing. SIGMOBILE will address the above spectrum of topics, sharing one common theme - mobility. The group's technical scope reflects the emerging symbiosis of portable computers and wireless networks, addressing the convergence of mobility, computing and information organization, its access, services, management and applications.

In the past years, mobile computing has developed into a fast moving, topical, and exciting area of computer science and engineering. Supporting the mobile computing and wireless networking research community, SIGMOBILE sponsors multiple successful conferences and workshops (e.g., MobiCom, MobiSys, MobiHoc, SenSys, UbiComp, PerDis, SEC, and HotMobile) that are well attended by its members, and generating high-quality and widely cited publications. These are valuable services for SIGMOBILE's members and the community, resulting in a strong Special Interest Group.

SIGMOBILE's Executive Committee (EC) in this period comprised of:

- Chair: Prof. Lili Qiu (Microsoft Research Asia/University of Texas at Austin, USA)
- Vice Chair: Prof. Falko Dressler (Technische Universität Berlin, Germany)
- Treasurer: Prof. Yingying Chen (Rutgers University, New Brunswick, USA)
- Secretary: Prof. Mo Li (Nanyang Technological University, Singapore)
- Past Chair: Prof. Marco Gruteser (Google / Rutgers University, New Brunswick, USA)

### **Diversity, Equity, and Inclusion**

SIGMOBILE operates a program to broaden participation that involves several key activities: workshops designed for underrepresented groups, informal lunch meetings and mentoring, and student travel grants. We also seized the opportunity that presented itself with virtual conferences to reach a much broader audience. We chose to offer free registration for most of our conferences and covered the costs of the conference largely through sponsorship funds. This removed barriers for participation and we observed significantly larger registrations counts as well as registrations from a broader set of geographic regions.

The SIGMOBILE student travel grant program usually co-sponsors student travel costs to SIGMOBILE conferences. Conference organizers are asked to explicitly consider the goal of broadening participation when selecting travel grant awardees. SIGMOBILE travel grant that enabled the students to also attend the main conference and further network with the community. Generally, the goal of ASSET is to empower students from developing countries and regional universities with technical writing, speaking, and presentation skills and also allow them to experience a top-tier research conference. SIGMOBILE also sponsored activities from partner organizations focused on broadening participation, such as the CRA-W conference.

### **Awards**

SIGMOBILE has a number of awards that it bestows on community members. In addition to the Outstanding Contributions Award (OCA) for career-long achievements, the Rockstar award for early career achievements, the Distinguished Service Award for service to the community, the Doctoral Dissertation Award for best PhD work in the field, the Test of Time award for papers that had a significant influence in the community, and various best paper awards at the leading conferences. In addition, SIGMOBILE also recognizes some of the best work in the current year, as identified by a selection committee, as the Research Highlights of SIGMOBILE.

Some of the notable award winners are mentioned below.

Outstanding Contributions Award: Not given.

Distinguished Service Award: Not given.

Rockstar Award: Prof. Xinyu Zhang (UCSD), in recognition of his significant contributions to wireless networking and wireless sensing, especially millimeter-wave network systems and new sensing modalities, driven by novel computational models and programmable hardware platforms.

Dissertation Award: Dr. Jingxian Wang for his dissertation, titled "Blind Wireless Beamforming to Power, Heat, and Move" at CMU for advancing the science and interdisciplinary applications of wireless energy transfer.

Runner up: Dr. Andrea Ferlini for his dissertation, titled "Exploring the Potential of Earables for Personal-Scale Sensing" at University of Cambridge for advancing the state of art of sensing in ear-worn devices.

The SIGMOBILE Test of Time award was selected by a committee chaired by Prof. Sung-Ju Lee (KAIST). The committee comprising Prof. Elizabeth Belding (UCSB), Wendi Heinzelman (University of Rochester), Sumi Helal (University of Florida), Mani Srivastava (UCLA), Karthik Sundaresan (Georgia Tech), and Joerg Widmer (IMDEA).

Padmanabhan Pillai and Kang G. Shin. "**Real-time dynamic voltage scaling for low-power embedded operating systems,**" ACM SOSP, 2001.

Abhinav Pathak, Y. Charlie Hu, and Ming Zhang. "**Where is the energy spent inside my app?: fine grained energy accounting on smartphones with Eprof,**" ACM EuroSys, 2012.

Fadel Adib and Dina Katabi. "**See through walls with WiFi!**" ACM SIGCOMM, 2013.

Significant Papers (Research Highlight Papers) The SIGMOBILE research highlights committee chaired by Prof. Lin Zhong selected the following papers as papers that combine a broad appeal with significant results.

SPiDR: Ultra-low-power Acoustic Spatial Sensing for Micro-robot Navigation  
<https://dl.acm.org/doi/abs/10.1145/3498361.3539775>

FabToys: Plush Toys with Large Arrays of Fabric-based Pressure Sensors to Enable Fine-grained Interaction Detection

<https://dl.acm.org/doi/10.1145/3498361.3538931>

OmniScatter: Extreme Sensitivity mmWave Backscattering Using Commodity FMCW Radar

<https://dl.acm.org/doi/10.1145/3498361.3538924>

Wavoice: A Noise-resistant Multi-modal Speech Recognition System Fusing mmWave and Audio Signals

<https://dl.acm.org/doi/10.1145/3485730.3485945>

A neural-based bandit approach to mobile crowdsourcing

<https://dl.acm.org/doi/10.1145/3508396.3512886>

## Conference Activity

In the past few years of pandemic, conference organization has become especially challenging. We would like to express our sincere appreciation for the conference organizers for their dedication and great efforts during this challenging time. In 2022, SIGMOBILE conferences returned to in-person or offered in-person option.

The 20<sup>th</sup> ACM International Conference on Mobile Systems, Applications, and Services (MobiSys 2022) was held in Portland, Oregon during June 27 – July 1, 2022 organized by General Chair Nirupama Bulusu (Portland State University) and Vice General Chair and Treasurer Ehsan Aryafar (Portland State University) as well as the technical program chair Aruna Balasubramanian (Stony Brook University).

The International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) was held in Atlanta, USA during Sept. 11 – 15, 2022. It was organized by general chairs Robert K. Harle (University of Cambridge, UK) and Thomas Plotz (Georgia Tech, USA) as well as technical program chairs Christian Holz (ETH Zurich, Switzerland), JeongGil Ko (Yonsei University, South Korea), and Lena Mamykina (Columbia University, USA).

The 28th Annual International Conference on Mobile Computing and Networking (MobiCom 2022) was held in Sydney, Australia during Oct. 17 – 21, 2022 organized by general chair Tao Gu (Macquarie University, Australia) and Aruna Seneviratne (UNSW, Australia) as well as technical program chairs Yasamin Mostofi (UCSB) and Tam Vu (University of Oxford). The International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc 2022) was held in Seoul, South Korea during Oct. 17 – 20 organized by general chairs Song Chong (KAIST), Changhee Joo (Korea University), Kyunghan Lee (Seoul National University) as well as the technical program chairs Kaushik Chowdhury (Northeastern University) and I-Hong Hou (Texas A&M University).

The 20th ACM Conference on Embedded Networked Sensor Systems (SenSys 2022) was held in Boston, USA, during Nov 6-9, 2022 organized by general chairs Jeremy Gummeson (UMass, Amherst) and Sunghoon Ivan Lee (UMass, Amherst) as well as technical program

chairs Jie Gao (Rutgers University) and Guoliang Xing (The Chinese University of Hong Kong).

The 23rd International Workshop on Mobile Computing Systems and Applications (ACM HotMobile 2022) was held in Tempe, AZ during March 9-10, 2022 organized by general chair Robert LiKamWa (Arizona State University, AZ) as well as technical program chair Urs Hengartner (University of Waterloo, Canada).

Pandemic has posed significant challenges to conference organizers. As the pandemic was over, we have seen conferences have returned to in-person. Meanwhile, we also recognize that in-person attendance is still challenging for many people, especially those residing in regions with travel restrictions as well as those with limited financial resources. We have solicited feedback from the conference organizers and attendees and come up with guidelines for SIGMOBILE future conference organization to best support our community for the years to come. We have the following requirements: (1) Video recording and sharing of conference presentation; (2) Authors are strongly encouraged to present in person; for special situation, they can seek an approval from organizers for remote attendance. We also have the following recommendations: (1) Online streaming of part or whole program. (2) Diversified conference registration. (3) Conference organizers decide in-person or online TPC meeting based on various factors including cost.

## **Special Projects and Programs**

### **1) Distinguished Lecture Series**

SIGMOBILE launched a distinguished lecture series to offer more learning and research sharing opportunities during pandemic. Till now, we have organized the following distinguished lectures:

- Dina Katabi: Monitoring People and Their Vital Signs, Feb. 18, 2022
- Daniel Ramage: Cross-Device Federated Learning and Federated Analytics at Google, April 29, 2022
- Shyam Gollakota: Creating Intelligent Acoustic Systems for Healthcare, Earables, and Voice Assistants, Sept. 23, 2022
- Olivier Sellers, Reliable LoRaWAN Dommunication under Downlink Traffic Limitations, Nov. 3, 2022
- Matt Welsh, Large Language Models and The End of Programming, Feb. 16, 2023
- Ashutosh Sabharwal, Measuring Human Behavior to Improve Health, Aug. 31, 2023

### **2) CEP Invited Talk**

Dr. Malleshm Dasari has led the development of the SIGMOBILE community engagement program <https://www.sigmobile.org/cep/index.html> to provide a platform for the community members to engage in various educational materials, programs such as broadening the community, developing social gatherings channels, and general discussions with successful researchers. The Program Committee includes Malleshm Dasari, Andra Lutu, Elahe Soltanaghaei, Jiasi Chen, Ling Zhong, Lili Qiu, Rajesh K. Balan, Suman Banerjee, Tingjun Chen. Over the past one year, they have initiated several activities ranging from game nights at conferences, hosting invited technical talks over Zoom on a bi-weekly basis, created and maintained CEP webpage as well as a slack channel that helped in connecting many SIGMOBILE members online. The talk videos have been released online on the CEP webpage.

### **3) Community grants**

To help support the next generation of mobile computing researchers and tighten community connections during the continued pandemic, SIGMOBILE has made available student community grants. For details, please consult the solicitation. Through rigorous review process, we have funded the following projects for one-year:

- 1) "Research and Implementation of Distributed Wi-Fi Phased Array using Low-Cost COTS Hardware" by Yu Duan, Daiyang Zhang and Zhiping Jiang, Xidian University, China
- 2) "A public repository of network traffic traces based on different wireless and mobile technologies for metaverse applications" by Washik Al Azad and Ihsan Ali, University of Nebraska at Omaha, USA
- 3) "SplitSmart: An Open Dataset for Enabling Research in Energy-efficient Ductless-Split Air Conditioners" by Keshav Kaushik, BITS Pilani, India
- 4) "Building an Open-Sourced Earable Computing Platform" by Tao Chen, University of Pittsburgh, USA

### **4) GetMobile**

SIGMOBILE continues to invest in GetMobile, SIGMOBILE's significantly transformed quarterly publication, which is a revamped version of the ACM SIGMOBILE Mobile Computing and Communications Review (MC2R). Each issue of GetMobile consists of a set of regular sections curated by a committed group of editors and has won a lot of praise from the broad community for improved quality of content and articles. GetMobile added several great young editors over the past few issues. The magazine's content remains excellent thanks to the editors' effort under the leadership of Landon Cox and the incredible staff of Donna Paris and JoAnn McHardy.

### **5) Youtube**

Use of SIGMOBILE's YouTube channel has risen sharply and become even more impactful with the shift to virtual conferences. With speaker approval, recordings from our major conferences and workshops are archived on this channel. This content is publicly available and anyone can now watch the talks from our conferences at their convenience. There are 2.04K subscribers, 1.1 K videos, and 341,880 views. Many of our viewers are from countries that are traditionally underrepresented at our conferences, including Asia and Latin America. This channel thereby allows us to reach many more constituents than our conferences and workshops currently do.

### **Summary**

SIGMOBILE is a well-supported organization. It remains both financially and technically strong. It has continued to support the Mobile computing and wireless networking community to produce high-impact research, organize valuable conferences and workshops, provide enrichment activities, connect members across the world, and offer financial support. This would not be possible without the strong support of many volunteers. We'd like to take this opportunity to thank all of them for their dedication and support!

## **ACM SIGMOD Annual Report July 1, 2022 and June 30, 2023**

### **Mission Statement.**

ACM SIGMOD is organized and is operated exclusively for educational, scientific, and technical purposes in its specialty, which is data management. We live in a data-driven society where decisions and science are increasingly driven by the insights gathered from analysis of relevant data, this societal transformation places us squarely in the center of technology disruptions.

### **State of ACM SIGMOD**

ACM SIGMOD remains a vibrant special interest group that brings together academics, professionals, researchers, and students who are all interested in different aspects of data. For its members, ACM SIGMOD publishes a quarterly newsletter viz. ACM SIGMOD Record and organizes an annual conference ACM SIGMOD International Conference on Management of Data which is typically held in the month of June. The conference is jointly held with another conference on Principles of Database Systems as well as several pre-conference and post-conference workshops. ACM SIGMOD 2022 was held last year in Philadelphia in a hybrid format. The overall conference participation was about 900 registrations with approximately 550 attendees participating in the conference in the in-person mode. This year ACM SIGMOD 2023 was held in Seattle with fully in-person mode. The number of registrations was approximately 950 attendees. Overall ACM SIGMOD remains healthy and vibrant and in spite of the challenges due to the pandemic, we are making slow and steady progress towards normalization.

### **Diversity, Equity, and Inclusion**

ACM SIGMOD in collaboration with VLDB has chosen to establish independent organizations to oversee the issues of diversity, equity, and inclusion. These organizations are:

- **DBCares:** The mission of DBCares is to create an inclusive and diverse Database community with zero tolerance for abuse, discrimination, or harassment.
- **Diversity and Inclusion in Database Conferences:** Make diversity and inclusion a first class citizen in database conferences.

DBCares was co-started by VLDB Endowment and Sigmod Executive Committees in October 2018. Both these organizations operate autonomously and advise on DEI issues to the SIGMOD Executive Committee. Furthermore, Diversity and Inclusion in Database Conferences group actively engages with SIGMOD conference organizers and plans D&I activities during the conferences such as Conference Keynotes on D&I, D&I panels, and travel sponsorship to students from disadvantaged groups. Effective this year, these two initiatives have been integrated under the broader umbrella of DEI in Databases.

### **Awards and Award Recipients**

2022 ACM SIGMOD Jim Gray Doctoral Dissertation Award.

- Supun Nakandala (Winner), University of California, San Diego. Advisor: Arun Kumar
- Benjamin Hilprecht (Honorable Mention), Technical University of Darmstadt. Advisor: Carsten Binnig
- Zongheng Yang (Honorable Mention), University of California, Berkeley, Advisor: Ion Stoica

#### 2022 ACM SIGMOD Systems Award:

To recognize the development of a software or hardware system whose technical contributions have had significant impact on the theory or practice of large-scale data management systems.

- Apache Flink greatly expanded the use of stream data-processing. The list of contributors listed for the award is just a selection from the list of Flink committers. As an open-source project, Apache Flink received contributions from over 1400 contributors, many of them substantial, which are not listed here: Aljoscha Krettek, Andrey Zagrebin, Anton Kalashnikov, Arvid Heise, Asterios Katsifodimos, Jiangji (Becket) Qin, Benchao Li, Bowen Li, Caizhi Weng, ChengXiang Li, Chesnay Schepler, Chiwan Park, Congxian Qiu, Daniel Warneke, Danny Cranmer, David Anderson, David Morávek, Dawid Wysakowicz, Dian Fu, Dong Lin, Eron Wright, Etienne Chauchot, Fabian Hueske, Fabian Paul, Feng Wang, Gabor Somogyi, Gary Yao, Godfrey He, Greg Hogan, Guowei Ma, Gyula Fora, Haohui Mai, Henry Saputra, Hequn Cheng, Igal Shilman, Ingo Bürk, Jamie Grier, Jark Wu, Jincheng Sun, Jing Ge, Jing Zhang, Jingsong Lee, Junhan Yang, Konstantin Knauf, Kostas Kloudas, Kostas Tzoumas, Kete (Kurt) Young, Leonard Xu, Lijie Wang, Lincoln Lee, Lungu Andra, Martijn Visser, Marton Balassi, Matthias J. Sax, Matthias Pohl, Matyas Orhidi, Maximilian Michels, Nico Kruber, Niels Basjes, Paris Carbone, Piotr Nowojski, Qingsheng Ren, Robert Metzger, Roman Khachatryan, Rong Rong, Rui Fan, Rui Li, Sebastian Schelter, Seif Haridi, Sergey Nuyanzin, Seth Wiesman, Shaoxuan Wang, Shengkai Fang, Shuyi Chen, Sihua Zhou, Stefan Richter, Stephan Ewen, Theodore Vasiloudis, Thomas Weise, Till Rohrmann, Timo Walther, Tzu-Li (Gordon) Tai, Ufuk Celebi, Vasiliki Kalavri, Volker Markl, Wei Zhong, Weijie Guo, Xiaogang Shi, Xiaowei Jiang, Xingbo Huang, Xingcan Cui, Xintong Song, Yang Wang, Yangze Guo, Yingjie Cao, Yu Li, Yuan Mei, Yun Gao, Yun Tang, Yuxia Luo, Zhijiang Wang, Zhipeng Zhang, Zhu Zhu, and Zili Chen.

#### 2022 ACM SIGMOD Contributions Award

For outstanding and sustained services to and promotion of the database field through activities such as education, conference organization, journals, standards, and research funding.

- K. Selcuk Candan for his extensive and outstanding service to the database community, including long-term dedication to the SIGMOD conference coordination, instigation of rolling deadlines for the SIGMOD conference, and leadership in the conference proceedings to ACM PACMMOD journal transition.

#### 2022 ACM SIGMOD Edgar F Codd Innovations Award

For innovative and highly significant contributions of enduring value to the development, understanding, or use of database systems and databases.

- Joseph M. Hellerstein, Professor, University of California at Berkeley for his innovative contributions in extensible query processing, interactive data analytics, and declarative approaches to networking and distributed computing.

#### 2022 ACM SIGMOD Test-of-Time Award

For the paper from the SIGMOD proceedings 10 years prior that has had the most impact over the intervening decade.

- “Integrating Scale Out and Fault Tolerance in Stream Processing using Operator State Management” by Raul Castro Fernandez, Matteo Migliavacca, Evangelia Kalyvianaki, and Peter Pietzuch.

### **New areas at SIGMOD Conference**

Effective SIGMOD’2022, we have created a new track on Data Science targeting the entire data life cycle of real applications. This data life cycle encompasses databases/data management/data systems/data engineering often leveraging statistical, Machine Learning and Artificial Intelligence methods and using massive and heterogeneous collections of potentially messy datasets. Data science papers study phenomena at scales and granularities never before possible. Such papers are expected to focus on data-intensive components of data science pipelines; and solve problems in areas of interest to the community (e.g., data curation, optimization, performance, storage, systems). We solicit submissions that describe deployed solutions to data science pipelines as well as submissions that describe fundamental experiences and insights from evaluating real-world data science problems.

Effective SIGMOD’2023, we have moved the paper publication process from the traditional conference proceedings format to the ACM Journal format leveraging the newly created family of journals called Proceedings of the ACM. Starting with SIGMOD’2023, all SIGMOD papers will be published in the Proceedings of the ACM on Management of Data (PACMMOD).

### **SIGMOD Conference Activity**

Our annual conference ACM SIGMOD’2023 was held in fully in-person mode at Philadelphia in June 2023. We are happy to report that the number of in-person attendees far exceeded our budgeted target of 700 attendees.

We are also glad to report that the fiscal health of ACM SIGMOD remains robust primarily because of very strong corporate sponsorship over the past few years. We are increasingly finding ways to bring the value of ACM SIGMOD to its members (both regular and student members) as well as our corporate sponsors.

### **Special Projects and Non-conference Programs**

ACM SIGMOD has approved funding for an annual budget to the Diversity and Inclusion in Database Conferences group for diversity and inclusion initiatives.

#### Key Challenges

- The membership data indicates that there has been sharp declines in the number of SIGMOD members. Although some of this decline can be attributed to the

pandemic, we feel that this is an area that needs to be addressed. We will work with the ACM and other SIGs to discuss ways to increase our membership.

As an organization we have to address the Diversity, Equity, and Inclusion issues at different levels. We would like to initiate special projects in this context but the challenges are first to ensure we have a fiscal viability and second the projects have to be contextualized in a local setting.

**SIGPLAN FY 2023 Annual Report**  
**July 2022 – June 2023**  
**Submitted by: Jeff Foster, SIGPLAN Chair**

SIGPLAN has four annual flagship conferences:

- Int. Conf. on Functional Programming (ICFP),
- Conf. on Programming Language Design and Implementation (PLDI),
- Symp. on Principles of Programming Languages (POPL), and
- Conf. on Systems, Programming, Languages, and Applications: Software for Humanity (SPLASH).

Additionally, SIGPLAN sponsors or co-sponsors eight other conferences and runs four instances of the Programming Languages Mentoring Workshop at our flagship conferences. All SIGPLAN conferences have transitioned back to in-person events, with varying levels of support for remote participation. For the most part, conference organizers have aimed to optimize for the experience of in-person attendees, while still providing access—typically, streaming videos of talks plus a mechanism for asking questions of speakers—during the event. Attendance at conferences has been variable, sometimes back to pre-pandemic levels and sometimes not.

## **1. Awards**

SIGPLAN announced the following awards:

- SIGPLAN Robin Milner Young Researcher Award: Nate Foster (Cornell)
- SIGPLAN Programming Languages Achievement Award: Kathryn S. McKinley (Google)
- SIGPLAN Software Award: OCaml (14 developers at a range of institutions)
- SIGPLAN Distinguished Service Award: Talia Ringer (UIUC)
- SIGPLAN John C. Reynolds Doctoral Dissertation Award: Sam Westrick, Carnegie Mellon University, “Efficient and Scalable Parallel Functional Programming through Disentanglement”
- SIGPLAN Most Influential Paper awards to papers presented 10 years earlier:
  - ICFP 2012: Deian Stefan, Alejandro Russo, Pablo Buiras, Amit Levy, John C. Mitchell, and David Mazières, “Addressing covert termination and timing channels in concurrent information flow systems”
  - OOPSLA 2012: Adam Betts, Nathan Chong, Alastair Donaldson, Shaz Qadeer, and Paul Thomson, “GPUVerify: a verifier for GPU kernels”
  - POPL 2013: Thomas Dinsdale-Young, Lars Birkedal, Philippa Gardner, Matthew Parkinson, and Hongseok Yang, “Views: Compositional reasoning for concurrent programs”
  - PLDI 2013: Jonathan Ragan-Kelley, Connelly Barnes, Andrew Adams, Sylvain Paris, Frédo Durand, and Saman Amarasinghe, “Halide: A Language and Compiler for Optimizing Parallelism, Locality, and Representation in Image Processing Pipelines”

## **2. Significant Programs**

SIGPLAN is committed to gold open access for papers in conferences that have joined Proceedings of the ACM on Programming Languages (PACM PL). SIGPLAN has an agreement with Scott Delman that SIGPLAN pays the per-paper fee of \$400 for gold open access, unless authors pay themselves or are covered by ACM Open. This program will

continue over the next year at least but may be phased out as ACM transitions to ACM Open. POPL, ICFP, and OOPSLA have been part of PACMPL since it was launched several years ago. PLDI recently joined PACMPL, with PLDI 2023 being the first conference with papers published in PACMPL. SIGPLAN, the PACMPL EiC, and the PACMPL Steering Committee recently developed a “Procedures of PACMPL” document describing how PACMPL operates. In Fall 2022, Mike Hicks was chosen as the new PACMPL EiC.

Until the pandemic, SIGPLAN provided approximately \$120,000 annually in travel grants, which go mostly to students. Additionally, SIGPLAN provided a total of \$80,000 annually to support the Programming Languages Mentoring Workshops. This money went to cover the travel costs of students. Also, SIGPLAN provided a total of \$50,000 annually to support four summer schools. This money goes mostly to cover the travel costs of students. We have once again been providing these grants, though we are not yet at the level of sponsorship we were previously.

The SIGPLAN Information Director sends a monthly newsletter via email to every SIGPLAN member. The newsletter contains information about upcoming SIGPLAN conferences and other activities that may be of interest to SIGPLAN members. Additionally, SIGPLAN has a presence on Facebook and Twitter.

The SIGPLAN blog is going well. The current editors are Roopsha Samant and Adrian Sampson. Postings include summaries of distinguished papers from SIGPLAN conferences and topics of broad interest to the community, such as improving gender balance in academia.

In FY 2022, SIGPLAN hired Neringa Young as Conference Manager. Neringa meets regularly with our flagship conference and PLMW chairs, and she meets with the SIGPLAN chair roughly every two weeks. Recently, some of those meetings have also included J.C. Peebles, the Program Coordinator for SIG and Conference Operations who works with SIGPLAN.

### **3. Innovative Programs**

SPLASH 2022 had “PLDI and POPL papers” tracks, and PLDI 2023 had a “TOPLAS & SIGPLAN papers” track, both of which invited authors of papers at other flagship SIGPLAN events to present their papers at those conferences. The goal is to create more opportunities to share information across the community and give speakers an opportunity to speak at an in-person event, especially if they could not do so at the conference their paper was accepted at. So far, ICFP and POPL have not yet developed such a track.

In the past year, we continued SIGPLAN-M, a subcommittee of SIGPLAN, <https://www.sigplan.org/LongTermMentoring/> SIGPLAN-M organizes an international long-term mentoring program for programming languages researchers. The goal of the program is to address two mentoring needs in the programming languages community. First, for aspiring or junior researchers, it is difficult (but necessary) to form long-term connections in the programming languages community, and to access the perspectives of researchers from other institutions. Second, for senior researchers, it is difficult to access mentorship of any kind. The program has been a

tremendous success and is highly valued by the community. Indeed, Talia Ringer won the 2023 SIGPLAN Distinguished Service Award in part for her development of SIGPLAN-M.

Because SIGPLAN has several flagship conferences, each with their own Steering Committee, sometimes lessons learned by one conference are not shared with other conferences. To address this issue, we started holding semi-regular SIGPLAN SC Summit Meetings, with representatives from the four flagship conferences. At these meetings, we share information and discuss SIGPLAN policies relevant to conferences.

#### **4. Broadening Participation**

SIGPLAN has a Programming Languages Mentoring Workshop (PLMW) co-located with every flagship conference, for a total of four PLMWs annually. Each PLMW has 30–40 attendees, which are a mix of undergraduate and graduate students. The goal of each workshop is to increase participants interested in pursuing more education in computer science in general and programming languages in particular. CRA (CERP) surveys the participants, both right after each workshop and one year later. CRA sends SIGPLAN reports with the outcomes. SIGPLAN uses those reports to understand the impact of PLMW and to raise funds from the National Science Foundation and industry.

The four flagship conferences use a variant of double-blind peer review to ensure fairness, particularly to under-represented groups.

SIGPLAN has created a pool of travel funding for members of historically marginalized groups. An example of such a group is the faculty and students at Historically Black Colleges and Universities.

SIGPLAN has a CARES committee, which is a sounding board for anyone who experiences a violation of an ACM policy, such as harassment, discrimination, or plagiarism.

#### **5. Key Issues**

SIGPLAN's flagship conferences have had mixed financial results. ICFP 2022 had a surplus, SPLASH 2022 had a loss, POPL 2023 had a surplus, PLDI 2022 had a loss (data for PLDI 2023 is not available yet). The losses have been due to a combination of (a) unexpected, last-minute expenses and (b) significant overspending at PLMW, whose budget is included in the main conference budget. Our conference manager is very aware of (a) and is working hard to avoid such cases going forward. For (b), our conference manager worked closely this past year with the PLMW steering committee to develop a new PLMW budgeting spreadsheet to make sure the event stays on track in terms of spending. So far it seems to be working well. SIGPLAN maintains a very large fund balance, so there is no concern about losses in the short term.

The choice of hosting FCRC in Orlando, FL caused significant concern from some members of the SIGPLAN community, who felt that FL is an unsafe location. After much discussion triggered by these concerns, the SIGPLAN EC recently adopted the following policy: "When selecting the location for a SIGPLAN conference or event, organizers should be sensitive to the needs, concerns, and safety of all community members." This is a

challenging issue, and we hope that ACM is studying it and will be able to provide a more actionable policy in the future.

**SIGSAC ANNUAL REPORT**  
**(July 2022 to June 2023)**  
**Submitted By: XiaoFeng Wang, Chair**

**1. Comment on the ways in which the SIG is a healthy and viable organization**

In the past year, SIGSAC has successfully organized high-impact conferences (see below), made multiple awards to celebrate excellence and continued to support the SIGSAC community.

**2. Describe your efforts related to Diversity, Equity, and Inclusion.**

SIGSAC announces the policy against harassment. SIGSAC promoted the climate survey at CCS'22. SIGSAC sponsored women's networking reception at all its sponsored conferences. One of last year's SIGSAC outstanding innovation awardees is Dr. Radia Perlman, an outstanding woman researcher.

**3. Provide a list of awards and recipients**

SIGSAC Outstanding Innovation Award: Dan Boneh and Radia Perlman

SIGSAC Outstanding Contributions Award: Ninghui Li

SIGSAC Doctoral Dissertation Award Winner: Aymeric Fromherz

SIGSAC Doctoral Dissertation Award Runners-Up:

Moritz Lipp

Pratyush Mishra

**4. List significant papers on new areas that were published in proceedings**

- **Victory by KO: Attacking OpenPGP Using Key Overwriting**
  - o Kenny Paterson, Lara Bruseghini, Daniel Huigens
- **Proving UNSAT in Zero Knowledge**
  - o Ning Luo, Timos Antonopoulos, William Harris, Ruzica Piskac, Eran Tromer, Xiao Wang
- **Automatic Detection of Speculative Execution Combinations**
  - o Xaver Fabian, Marco Patrignani, Marco Guarnieri
- **Zapper: Smart Contracts with Data and Identity Privacy**
  - o Samuel Steffen, Benjamin Bichsel, Martin Vechev
- **STAR: Secret Sharing for Private Threshold Aggregation Reporting**

o Alex Davidson, Peter Snyder, E. B. Quirk, Joseph Genereux, Hamed Haddadi, Benjamin Livshits

All published at ACM SIGSAC CCS 2022

## **5. Describe conference activity**

In the past year, SIGSAC has sponsored the following conferences:

CCS: ACM Conference on Computer and Communications Security, 1993 onwards

SACMAT: ACM Symposium on Access Control Models and Technologies, 1995 onwards

ASIACCS: ACM Symposium on Information, Computer and Communications Security, 2006 onwards

WiSec: ACM Conference on Security and Privacy in Wireless and Mobile Networks, 2008 onwards

CODASPY: ACM Conference on Data and Application Security and Privacy, 2011 onwards

## **6. Comment on special projects and non-conference programs that provided service to some part of your technical community**

## **7. A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.**

All SIGSAC conferences have moved back to the on-site mode with some remote elements (for presentations), which turn out to be successful in general. Particularly, CCS'22 has over 1000 attendees (on-site and remote combined). A challenge is that the quick growth of large conferences like CCS puts pressure to smaller conferences: increasingly people become reluctant to submit papers to small conferences given the relatively higher chances to get their papers accepted by the leading venues. Also it becomes challenging to balance the expansion of the conference with the assurance of the quality of papers and fairness of the procedure. I feel that this problem is not limited to the SIGSAC community and would be happy to hear from other communities their experience.

**SIGSAM Annual Report**  
**July 2022 – June 2023**  
**Submitted By: Veronika Pillwein, SIGSAM Chair**

SIGSAM was founded in 1965 (under the name SICSAM) by Jean E. Sammet, who was also chair of SIGPLAN and, later in the 1970s, was the first female president of ACM. SIGSAM provides members with a forum in which to exchange ideas about the practical and theoretical aspects of algebraic and symbolic mathematical computation. Its scope of interests includes design, analysis and application of algorithms, data structures, system and languages.

SIGSAM facilitates communication amongst not only its members, but also the wider symbolic computation research community. The primary vehicles for this are the SIGSAM website ([www.sigsam.org](http://www.sigsam.org)) and the SIGSAM and ISSAC mailing lists. The wider SIGSAM-friends mailing list has an audience of 2,000+. These mailing lists are used to announce a wide range of events and items of interest to the larger research community. The website provides a wide range of information to the community, including SIGSAM activities & info (e.g. awards, elections, bylaws, committees). The SIGSAM website hosts among other things the flagship conference series in our area, the International Symposium on Symbolic and Algebraic Computation (ISSAC). All of this is managed by the excellent work of SIGSAM Information Director Zafeirakis Zafeirakopolous (Switzerland).

Communications in Computer Algebra: The ACM Communications in Computer Algebra (CCA) is a quarterly publication of the ACM sponsored by SIGSAM. The CCA has been published since 1965, though previously as the SIGSAM Bulletin and the SIGSAM Bulletin. It includes formally reviewed articles, timely communications and announcements, as well as traditionally publishing the abstracts of ISSAC posters and software demos. It is published quarterly in the ACM Digital Library, and twice a year double-issues are published in print for members. The current Editor is Dr. Wen-shin Lee from the University of Antwerp in Belgium, who continues to do an outstanding job. Associate Editors are Massimo Caboara (Italy), Shaoshi Chen (China), Jean-Guillaume Dumas (France), Laureano Gonzalez-Vega (Spain), Kosaku Nagasaka (Japan) and Michael Wester (USA).

Conferences and Events: The International Symposium on Symbolic and Algebraic Computation (ISSAC) is typically either sponsored by ACM and SIGSAM or put on “in cooperation”. ISSAC Proceedings have always appeared in the ACM Digital Library. ISSAC 2022, held July 4-7 in Lille, France, was carried out hybrid because of the ongoing difficult situation worldwide. It was sponsored by ACM/SIGSAM. The 2023 edition was held in Tromsø, Norway, in cooperation with ACM/SIGSAM as a fully in person event.

The two other main conferences in computer algebra and symbolic computation, Applications of Computer Algebra (ACA) and Computer Algebra for Scientific Computing (CASC) were organized in August 2022 as part of a larger event embracing three summer schools. This event, SCALE (Symbolic Computation: Algorithms, Learning, and Engineering) was intended as a full in-person event with major support for young researchers. Given the ongoing situation with the pandemic and other emerging crises, it had to be moved to a hybrid event. The organizers were still aiming at large number of in person attendants. This event was sponsored by ACM/SIGSAM which served to advertise ACM/SIGSAM membership.

Awards: The primary SIGSAM awards are the Jenks Memorial Prize, ISSAC Distinguished Paper award, and ISSAC Distinguished Student Author award. The Jenks Memorial Prize is a biannual award recognizing “outstanding software engineering contributions in the field of computer algebra.”

The Awards panel for the 2021 ACM SIGSAM Richard Dimick Jenks Memorial Prize (Chaired by Michael Monagan, Simon Fraser University) selected Henri Cohen, Karim Belabas, and Bill Allombert as the winner for the Pari/GP computer algebra system for the Macaulay and Macaulay2 computer algebra systems. The award was presented at ISSAC 2022. The call for the Jenks Memorial Prize 2023 has been prepared and announced at ISSAC 2023.

2022 ISSAC Distinguished Paper Award: awarded to Pascal Giorgi, Bruno Grenet, Armelle Perret du Cray and Daniel Roche for their paper "Sparse Polynomial Interpolation and Division in Soft-linear Time".

2022 ISSAC Distinguished Student Author Award: awarded to Guillaume Houry for the paper "Average complexity of matrix reduction for clique filtrations".

These papers are, by definition, the key results of the ISSAC proceedings.

The ACA Early Researcher Award 2022 was, as in the previous year, sponsored by SIGSAM. The ACA-ERA 2022 were awarded to Gianira Alfarano (Switzerland), Curtis Bright (Canada), Shaoshi Chen (China), and Ali K. Uncu (UK and Austria).

As a non-conference activity, the SIGSAM committee decided to sponsor a project run by Rob Corless to document the history of Computer Algebra by interviewing those of the founders who are still living, and recording those interviews as podcasts. These podcasts would also be hosted on the SIGSAM webpage.

Key Issues for SIGSAM and its Membership: As in the recent past, another key issue for SIGSAM is making the case for SIGSAM membership to the wider symbolic computation community, given that most of the services we provide are for members and non-members alike. One driver for membership is the reduced ISSAC registration fee, which did not play a role during the Covid-19 pandemic as online registration was often free or severely reduced. In 2018, it was possible to become ACM/SIGSAM member at the same time as registering for ISSAC. Unfortunately, in the recent years this was not possible, but we hope for a similar arrangement in 2023.

Currently the most pressing issue is the new ACM/SIG overhead calculation. The discussions with the members of SIGSAM on this situation and possible actions were intense and fruitful. Still, if this regulation cannot be adapted to a more realistic rate, the very existence of SIGSAM is at stake.

## **SIGSIM Annual Report**

**July 2022 – June 2023**

**Submitted by: Andreas Tolk, SIGSIM Chair (with input from Kalyan Perumalla, ex-Chair)**

### **1. Comment on the ways in which the SIG is a healthy and viable organization.**

SIGSIM continues to be active with research community involvement and healthy with good fiscal reserves and planning. Multiple conferences continue to be operated under the aegis, co-sponsorship, or in-cooperation with SIGSIM. Office bearers are elected by members once every two years. Member meetings, which have been increased in frequency from once-a-year to twice-a-year, are continuing to enhance member engagement. Web presence has been aided by timely updates. While some senior researchers in the SIGSIM community are on their path to retirement, the challenge of infusing new, early career participants is continuing to be given consideration. Multiple early career researchers have been nominated and/or elected to different committees of SIGSIM conferences. On the ACM Digital Library, SIGSIM is continuing to register a notable number of article downloads. Overall, SIGSIM remains viable, financially stable, and active.

### **2. Describe your efforts related to Diversity, Equity, and Inclusion.**

The steering group for the flagship conference of SIGSIM was restructured to ensure reflecting our DEI commitment, including more international participation under female leadership.

### **3. Provide a list of awards and recipients:**

- a. The SIGSIM Distinguished Contributions Award was announced at the 2022 Winter Simulation Conference to Dr. Bernard Zeigler of the RTSync Corp and University of Arizona (USA) and a laudatio delivered at the SIGSIM Members Meeting (Virtual) meeting in January 2023.
- b. WSC PhD Colloquium Award was given to Yuanlu Bai for the paper "Rare-Event Simulation Without Variance Reduction: An Extreme Value Theory Approach," coauthored by Henry Lam and Sebastian Engelke.
- c. The ACM SIGSIM-PADS Conference was held in Orlando, FL, USA June 2023. This year, it was synergistically co-hosted with multiple ACM conferences as part of the ACM Federated Computing Research Conference (FCRC).
- d. PADS Best Paper Award was given to Philipp Andelfinger, Till Köster and Adelinde Uhrmacher for their paper "Zero Lookahead? Zero Problem. The Window Racer Algorithm."
- e. PADS PhD Colloquium Award was given to Joao P. A. Dantas, Marcos R. O. A. Maximo, and Takashi Yoneyama for their paper "Autonomous Agent for Beyond Visual Range Air Combat: A Deep Reinforcement Learning Approach."

### **4. List significant papers on new areas that were published in proceedings:**

- a. "Workload Interference Prevention with Intelligent Routing and Flexible Job Placement on Dragonfly," by Yao Kang, Xin Wang, and Zhiling Lan, published in the PADS'23 Proceedings

### **5. Describe conference activity.**

- a. PADS'23: Fully sponsored by SIGSIM, held as an in-person conference in Orlando, FL, USA, June 2023
- b. MSWiM'22: Fully sponsored by SIGSIM, held as an in-person conference in Montreal, Canada, October 2022
- c. WSC'22: Partially sponsored by SIGSIM, successfully held as a hybrid conference in Singapore, December 2022
- d. DS-RT'22: Partially sponsored by SIGSIM, held as an in-person conference in Ales, France, September 2022

**6. Comment on special projects and non-conference programs that provided service to some part of your technical community.**

- a. The Modeling and Simulation Knowledge Repository (MSKR) has been supported by SIGSIM and hosted for the community.
- b. Special committee on Space Simulations is continuing its activity in bringing new researchers and activities in federated simulation technologies for space models such as lunar and Mars missions.
- c. SIGSIM PADS joined the ACM Reproducibility Initiative in 2019 by successfully creating reproducibility committees to evaluate papers. This effort has been continued again this year in PADS'23 with multiple authors choosing their manuscripts to be evaluated under this initiative to be awarded their relevant ACM badges.
- d. SIGSIM signed a gift agreement with the NCSU Computer Simulation Archive (CSA) to support them over the next three years. NCSU CSA contributes significantly to archiving SIGSIM relevant accomplishments.
- e. SIGSIM will return in 2023 to holding one members/business meeting every year at the Winter Simulation Conference, open to all its members. This meeting will have a virtual component, which will be recorded. Information about all recent meetings and associated slides are available here: ACM SIGSIM Meetings (<https://sigsim.acm.org/meetings>).

**7. A summary of the key issues that SIG membership will have to deal with in the next 2-3 years.**

- a. SIGSIM has been continuing to make renewed efforts for increasing the student membership. One of the ways this has been accomplished is by providing complimentary membership for one year to those students who present at PhD colloquium segments of SIGSIM-related conferences (primarily PADS and WSC).
- b. Technical and programmatic challenges and opportunities continue to arise with respect to emerging technologies (such as AI/ML and Digital Twins) that are being carefully tracked.
- c. We are continuing to solicit nominations for named volunteering activities for which students would apply to be selected to serve and get recognized for their efforts.
- d. Communication between SIGSIM other professional bodies, such as the INFORMS Simulation Society, has been sustained over the year in the spirit of synergetic collaboration. The ongoing Simulation Archive initiative of SIGSIM is one of the evident manifestations of such coordinated activity.

**SIGSOFT FY'23 Annual Report**  
**July 2022 – June 2023**  
**Submitted by: Thomas Zimmermann, Chair**

*The ACM Special Interest Group on Software Engineering (SIGSOFT) seeks to improve our ability to engineer software by stimulating interaction among practitioners, researchers, and educators; by fostering the professional development of software engineers; and by representing software engineers to professional, legal, and political entities.*

This report provides a summary of key SIGSOFT activities over the past fiscal year. The software engineering community had a strong technical year with many significant contributions. SIGSOFT remains healthy both in terms of membership and finances. SIGSOFT sponsors 10+ conferences each year with several thousand attendees. To support its community SIGSOFT has invested in special projects, non-conference programs, as well as diversity, equity, and inclusion efforts.

## **EFFORTS RELATED TO DIVERSITY, EQUITY, AND INCLUSION**

Several events or programs were focused on broadened participation either geographically, or among under-represented members of our community.

- SIGSOFT has dedicated **Liaisons for Diversity, Equity, and Inclusion (DEI)** who lead the DEI efforts for SIGSOFT and its conferences, but also connect and lead in the broader ACM community around Diversity, Equity, and Inclusion. The current liaisons are Jo Atlee, Kelly Blincoe and Alexander Serebrenik. They also serve as the founding chairs and members of the SIGSOFT CARES committee that was established in Fall 2022.
- As part of SIGSOFT's ongoing commitment to foster global educational opportunities and inclusivity, we launched a **financial support program for summer/winter schools** focused on all aspects of software engineering across the world. We received 17 applications, of which we supported 13, with amounts of up to US\$ 10K. This program was coordinated by Marsha Chechik.
- The **CARES committee** is a resource comprising of well-known and respected people in the software engineering community who are approachable and willing to listen to and help people who experience or witness discrimination, harassment, or other ethical policy violations, either at SIGSOFT events or related to ACM publications. CARES provided support at the ESEC/FSE 2022 and ICSE 2023 conferences. For details see the CARES annual summary report.<sup>2</sup>
- SIGSOFT supports a **Student Mentorship Workshop (SMEW)** at the ICSE 2023 conference. This support was coordinated by Lin Tan.
- SIGSOFT also financially supports the CRA-WP Graduate Cohort Workshops

These efforts are in addition to ongoing exiting efforts related to diversity, equity, and inclusion.

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<sup>2</sup> <https://sigsoft.medium.com/sigsoft-cares-annual-summary-report-for-2022-2023-e4e72008ae53>

- The major SIGSOFT conferences have EDI chairs, and there are guidelines on the kinds of activities the chairs can initiate and run. Most conferences also have a Code of Conduct and a Conference Diversity and Inclusion Plan.
- SIGSOFT has a larger community of people who are regularly thinking about EDI subjects: EDI conference chairs, participants of diversity panels, conference participants (when subscribing to Code of Conduct or selecting pronouns), etc.
- SIGSOFT has a dedicated travel support and conference attendance program called CAPS for members of underrepresented groups, students, or anyone who cannot afford the registration fees of a conference.
- To broaden the reach and membership, SIGSOFT has established national chapters in India (iSoft) and China (cSoft). Each chapter has a liaison member on the SIGSOFT EC.

## AWARDS AND RECIPIENTS

The SIGSOFT awards program continues to recognize the many achievements of the software engineering community.

- The ACM SIGSOFT **Outstanding Research Award** was presented to **Gail Murphy** (University of British Columbia) *“for pioneering contributions to recommenders for software engineering and program comprehension that have impacted both theory and practice”*.
- The ACM SIGSOFT **Distinguished Service Award** was presented to **John Grundy** (Monash University) *“for continued outstanding service to the software engineering community, including the repeated successful organization of flagship conferences, and leadership in the Australasian research and education community.”*
- The ACM SIGSOFT **Influential Educator Award** was presented to **Tao Xie** (Peking University) *“for significant contributions in mentoring of graduate students and junior researchers, broadening participation of underrepresented groups in software engineering/computing, and innovation in educational tooling.”*
- The ACM SIGSOFT **Early Career Researcher Award** was presented to **Chunyang Chen** (Monash University) *“for outstanding contributions to the study of intelligent software development automation including automated mobile application development, software testing, migration and accessibility.”*
- The ACM SIGSOFT **Outstanding Dissertation Award** was presented to **David Shriver** (now at Carnegie Mellon University) for the PhD thesis *“Increasing the Applicability of Verification Tools for Neural Networks”* (University of Virginia, advised by Matt Dwyer and Sebastian Elbaum).
- The ACM SIGSOFT **Impact Paper Award** recognizes a paper with exceptional impact on research or practice that was published in a SIGSOFT conference at least 11 years earlier. This year, the award went to the paper **“EvoSuite: Automatic Test Suite Generation for Object-Oriented Software”** (published at ESEC/FSE 2011) by **Gordon Fraser (University of Passau) and Andrea Arcuri** *“for building EvoSuite, a search-based software testing tool which has a significant community around it.”*

In total, the selection committees considered 39 nominations (8 for outstanding research, 4 for distinguished service, 4 for influential educator, 7 for impact paper, 8 for early career, and 8 for outstanding dissertation). The decisions were made through a combination of online

discussions and virtual meetings. A huge thanks to the SIGSOFT Award Committee Chairs (Andrea Zisman, Dongmei Zhang, and Natalia Juristo) and Deputy Chairs (Walid Maalej and Anders Moller), as well as the members of the respective committees, and all nominators. The SIGSOFT Awards Program is coordinated by David Lo.

In addition to the Impact Paper Award, many SIGSOFT conferences also have **Most Influential Paper Awards**, also known as “test of time awards”, which are given to papers that have appeared at a particular conference.

- At ICSE the SIGSOFT co-sponsored conference with the longest track record of awarding Most Influential Papers, the award went to the ICSE 2013 paper “SemFix: program repair via semantic analysis”, by **Hoang Duong Thien Nguyen, Dawei Qi, Abhik Roychoudhury, and Satish Chandra**.
- The ESEC/FSE conference recognized the SIGSOFT FSE 2012 paper “Automated concolic testing of smartphone apps”, by **Saswat Anand, Mayur Naik, Mary Jean Harrold, and Hongseok Yang**.

Many of SIGSOFT’s sponsored meetings also presented **Distinguished Paper Awards**. SIGSOFT allows up to 10% of the accepted papers to be selected for this award. The list of recognized papers is available at <http://sigsoft.org/awards/distinguishedPaperAward.html>

## **SIGNIFICANT PAPERS ON NEW AREAS**

Software plays a prominent role in different application domains as well as other research areas in computer science, such as big data, human-computer interaction, mobile computing, artificial intelligence and machine learning, distributed systems, and security. Everything depends on software today and will continue in the future, even with the rise of large language models (LLMs). Over the past year, we have seen the rapid rise of these models in software systems. AI is also more frequently used to automate software engineering activities.

As examples for the breadth of the software engineering field, we highlight below distinguished papers from the ESEC/FSE 2022 and ICSE 2023, two of the main general software engineering conferences sponsored by SIGSOFT. The papers have been grouped into themes using ChatGPT.

Several papers focused on the **developer community and experience** of software development. The human side of software development is as crucial as the technical side. These papers delve into developers’ sense of belonging in virtual communities, the survival strategies of veteran women software developers, and survival strategies in technical interviews. Code reviews play a pivotal role in software development to ensure code quality, share knowledge, and foster collaboration and several papers investigated various aspects of code review. Another paper studied how developers’ decision-making while writing code.

- Do I Belong? Modeling Sense of Virtual Community Among Linux Kernel. Bianca Trinkenreich, Klaas-Jan Stol, Anita Sarma, Daniel M German, Marco Gerosa, and Igor Steinmacher (ICSE 2023)
- Asynchronous Technical Interviews: Reducing the Effect of Supervised Think-Aloud on Communication Ability. Mahnaz (Mana) Behroozi, Chris Brown, Chris Parnin (ESEC/FSE 2022)

- Using Nudges to Accelerate Code Reviews at Scale. Qianhua Shan, David Sukhdeo, Qianying Huang, Seth Rogers, Lawrence Chen, Elise Paradis, Peter Rigby, Nachiappan Nagappan (ESEC/FSE 2022)
- First Come First Served: The Impact of File Position on Code Review. Enrico Fregnan, Larissa Braz, Marco D'Ambros, Gül Calikli, Alberto Bacchelli (ESEC/FSE 2022)
- STILL AROUND: Experiences and Survival Strategies of Veteran Women Software Developers. Sterre van Breukelen, Ann Barcomb, Sebastian Baltés, and Alexander Serebrenik (ICSE 2023)
- A Qualitative Study on the Implementation Design Decisions of Developers. Jenny T. Liang, Maryam Arab, Minhyuk Ko, Amy J. Ko, and Thomas D. LaToza (ICSE 2023)

**Automated and advanced analysis techniques** around testing, verification, debugging, and security remained popular topics in the SE research community. This includes a paper on the evolution of type annotations.

- Online Testing of RESTful APIs: Promises and Challenges. Alberto Martin-Lopez, Sergio Segura, Antonio Ruiz-Cortés (ESEC/FSE 2022)
- Minerva: Browser API Fuzzing with Dynamic Mod-Ref Analysis. Chijin Zhou, Quan Zhang, Mingzhe Wang, Lihua Guo, Jie Liang, Zhe Liu, Mathias Payer, Yu Jiang (ESEC/FSE 2022)
- SPINE: A Scalable Log Parser with Feedback Guidance. Xuheng Wang, Xu Zhang, Liqun Li, Shilin He, Hongyu Zhang, Yudong Liu, Lingling Zheng, Yu Kang, Qingwei Lin, Yingnong Dang, Saravan Rajmohan, Dongmei Zhang (ESEC/FSE 2022)
- Understanding and Detecting On-the-Fly Configuration Bugs. Teng Wang, Zhouyang Jia, Shanshan Li, Si Zheng, Yue Yu, Erci Xu, Shaoliang Peng, and Xiangke Liao (ICSE 2023)
- Testing Database Engines via Query Plan Guidance. Jinsheng Ba and Manuel Rigger (ICSE 2023)
- Sibyl: Improving Software Engineering Tools with SMT Selection. Will Leeson, Matthew B Dwyer, and Antonio Filieri (ICSE 2023)
- Lejacon: A Lightweight and Efficient Approach to Java Confidential Computing on SGX. Xinyuan Miao, Ziyi Lin, Shaojun Wang, Lei Yu, Sanhong Li, Zihan Wang, Pengbo Nie, Yuting Chen, Beijun Shen, and He Jiang (ICSE 2023)
- Efficiency Matters: Speeding Up Automated Testing with GUI Rendering Inference. Sidong Feng, Mulong Xie, and Chunyang Chen (ICSE 2023)
- Rete: Learning Namespace Representation for Program Repair. Nikhil Parasaram, Earl Barr, and Sergey Mehtaev (ICSE 2023)
- Compatible Remediation on Vulnerabilities from Third-Party Libraries for Java Projects. Lyuye Zhang, Chengwei Liu, Zhengzi Xu, Sen Chen, Lingling Fan, Lida Zhao, Jiahui Wu, and Yang Liu (ICSE 2023)
- The Evolution of Type Annotations in Python: An Empirical Study. Luca Di Grazia, Michael Pradel (ESEC/FSE 2022)

We would also like to highlight **SIGSOFT Research Highlights**. SIGSOFT is selecting papers from its sponsored conferences that show recent, significant, and exciting results that are also of general interest to the computer science research community. These papers, called SIGSOFT Research Highlights, are also recommended for consideration for the Research Highlights section of the Communications of the ACM. The SIGSOFT Research

Highlights Committee is chaired by Martin Robillard. The committee selected the following paper as a research highlight.

### **QDiff: Differential Testing of Quantum Software Stacks**

J. Wang, Q. Zhang, G.H. Xu, M. Kim (ASE 2021)

**Nomination Statement:** This paper presents a three-stage approach for testing quantum compilers and simulators that are part of the software stack for quantum computers. The authors note three main challenges for testing quantum software stacks including (i) generating semantically equivalent programs for testing compilers, (ii) exposing and examining bugs in quantum simulators and hardware, and (iii) interpreting measurements from the results of running quantum programs given their probabilistic nature. To address these three issues the authors develop QDiff which introduces three main features that align with the challenges listed above, namely: (i) it is capable of generating logically equivalent quantum programs using a set of equivalent gate transformation rules, (ii) a process for selecting subsets of said programs to run on hardware, and (iii) it can determine the how many measurements are needed for a reliable comparison between equivalent programs to detect potential issues. Quantum computing continues to grow in popularity, particularly as quantum supremacy for certain classes of algorithms has now been illustrated. Testing the software stack for these programs will likely be an important topic of research moving forward, therefore, I believe that this line is both important, and given the focus on automation, is appropriate for ACM research highlights: Important topic; Equivalent gate Transformation and mutation are interesting applications of testing techniques in the quantum domain; Well-motivated problem; Promising preliminary results.

## **CONFERENCE ACTIVITY**

Over the past year SIGSOFT sponsored and co-sponsored 10+ conferences related to software engineering. Most conferences returned to an in-person format and frequently offered hybrid formats as well.

The following is a list of some of the SIGSOFT sponsored conferences. The SIGSOFT conference program is overseen by the SIGSOFT Vice Chair, Marsha Chechik.

- ASE: Automated Software Engineering Conference
- CAIN: International Conference on AI Engineering – Software Engineering for AI
- DEBS: International Conference on Distributed and Event-based Systems
- ESEC/FSE: Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering: held annually.
- ESEM: International Symposium on Empirical Software Engineering and Management
- ICPE: International Conference on Performance Engineering
- ICPC: International Conference on Program Comprehension
- ICSE: International Conference on Software Engineering
- ISSTA: International Symposium on Software Testing & Analysis
- MoDELS: International Conference on Model-Driven Engineering Languages and Systems
- MSR: International Conference on Mining Software Repositories

- SEAMS: International Symposium on Software Engineering for Adaptive and Self-Managing Systems
- SPLC: International Software Product Line Conference

The conference attendance numbers are healthy and appear to be returning to pre-pandemic levels. For example, the ICSE 2022 conference had 2025 total attendees (virtual and physical), the ICSE 2023 conference had 1000+ in person attendees. With around 400 in person attendees, the ESEC/FSE 2022 conference had a record number of in-person attendees despite a significant portion of the SE community unable to travel from China because of COVID restrictions.

In 2024, SIGSOFT will launch the **Proceeding of the ACM on Software Engineering (PACMSE)**, with FSE as the inaugural conference. PACMSE is gold open access. For the first two years of PACMSE, SIGSOFT will cover the open access fees when authors can't. Huge thanks to Luciano Baresi for driving the PACMSE initiative for FSE.

Through the **Conference Aid Program for Students (CAPS)**, SIGSOFT provided travel support to conferences for dozens of graduate and undergraduate student-members as well as support to defray the costs of childcare for all members of our community (faculty qualify as well). The support is available for anyone who fits into one or more of the following categories:

- participants who identify as being a member of an underrepresented racial or ethnic group(s) in the place they work,
- participants based in low income and lower middle-income countries as identified by the World Bank List of Economies,
- undergraduate students,
- SIGSOFT members (both student and professional), or
- members of the SE community who cannot afford the registration fee.

The CAPS program is coordinated by Nan Niu. Detailed statistics about the CAPS program including open CAPS applications can be found here:

⇒ <https://acmsigsoft.github.io/caps/capsmain/>

SIGSOFT continued the **Conference Surplus Reinvestment**, which was launched in FY19. The surplus reinvestment for Year N of a conference is 25% of the Conference Net from Year N-2 and 25% of the Conference Net from Year N-3.

## **SPECIAL PROJECTS AND NON-CONFERENCE PROGRAMS**

SIGSOFT has several existing programs to aid and expand our membership.

**SEWORLD** is a mailing list provided as a service to the Software Engineering community. It is intended primarily for the dissemination of time-sensitive information relevant to the field of software engineering research such as call for papers/participation and position announcements. The mailing list is moderated by Jinqiu Yang and Elena Sherman.

The **Software Engineering Notes** (<https://sigsoft.org/SEN/>) is distributed exclusively in electronic form. The newsletter is published quarterly and provides an update to the

community about ongoing efforts as well as other reports. The current Editor-in-Chief is Jacopo Soldani.

In 2022, SIGSOFT launched the **SIGSOFT Blog** (<https://sigsoft.medium.com/>) under the leadership of Cristian Cadar as an additional way to enhance the communication between the SIGSOFT Executive Committee and the software engineering community, and to create a sense of community within SIGSOFT, and publicize software engineering and SIGSOFT activities to the outside world. Noteworthy blog posts in the last fiscal year are:

- Archiving, Referencing and Citing Software Artefacts Made Easy.  
<https://sigsoft.medium.com/archiving-referencing-and-citing-software-artefacts-made-easy-a5f00b8952d8>
- Tasks and Value Streams.  
<https://sigsoft.medium.com/tasks-and-value-streams-aaf9e54445de>
- Major Revisions at ESEC/FSE 2023  
<https://sigsoft.medium.com/major-revisions-at-esec-fse-2023-2ce6b8caecd7>

The SIGSOFT **Webinar series** remains very popular; in the past year, SIGSOFT organized webinars on topics such as “From SBOM to Trusted Software Supply Chain: How Far Are We?”, “Programming Language Processing: How AI can Revolutionize Software Development?”, and “Cognitive Driven Development: A Research Agenda”. The Webinar program is managed by Venera Arnaoudova and Shane McIntosh.

The software engineering community has many community-driven vehicles to **promote open science** such as dedicated tracks for replications and negative results at conferences, policies for open science current draft is at: <https://github.com/acmsigsoft/open-science-policies>, and the ROSE festival <https://github.com/researchart/rose>, and pre-registered studies (EMSE journal in partnership with several SIGSOFT conferences, ACM TOSEM).

We continued to improve member benefits over the past fiscal year.

- In March 2023, SIGSOFT launched a **Mastodon server** exclusively for SIGSOFT members ([social.sigsoft.org](https://social.sigsoft.org)). This benefit was initiated by Martin Robillard who also maintains the server.
- In May 2023, SIGSOFT launched a **free email forwarding address** for members. Each SIGSOFT member will have an email address on [sigsoft.org](https://sigsoft.org) that will be forwarded to their email on member record.

In Summer 2023, SIGSOFT launched its **new web presence** <https://sigsoft.org/>. The website is maintained through GitHub Pages and is designed so that contributions can be made through pull requests. This allows multiple people to contribute and at the same time preserves a history of changes that are made to the webpage. The transition to the webpage was done by Raula Gaikovina Kula who also serves as SIGSOFT’s Information Director.

## **KEY ISSUES IN THE NEXT 2-3 YEARS**

While SIGSOFT is stable and strong, there are several challenges that SIGSOFT and the broader software engineering community will continue to face.

- The **new conference schedule** for ICSE, FSE, and ASE will create several complexities for the entire software engineering community. Starting 2024, the FSE conference will move to late June/July, ICSE will move to April/early May, and ASE will be in October/mid-November. At the same time FSE and ICSE are changing the reviewing models (major revisions, two deadlines), which will create additional review work for the community. The transition will need to be carefully navigated.
- ACM is expected to transition to **a gold open access model** within the next few years. This may have an impact on conference attendance and publication revenue for SIGSOFT that needs to be carefully understood.

Despite a large growth in the number of software engineers, SIGSOFT's **membership numbers** have not been growing. We will aim to increase membership by providing more benefits to SIGSOFT members, increased visibility of SIGSOFT at conferences, and a focus on practitioners and regions beyond the United States.

**SIGSPATIAL FY23 Annual Report  
(July 2022-June 2023)**

**Submitted by: Shawn Newsam, SIGSPATIAL Chair (during review period)**

**1. Comment on the ways in which the SIG is a healthy and viable organization**

The core mission of SIGSPATIAL is to promote academic and industrial research that addresses issues related to the acquisition, management, and processing of spatial data and knowledge generation, with a focus on conceptual, design, algorithmic, geometric, visual, and systems implementations aspects.

Historically, the scope of SIGSPATIAL initially included geographic information systems (GIS), along with data storage, query processing, indexing and data mining. However, in recent years our scope diversified with interest from a variety of researchers and practitioners whose data sets have spatial information as the key enabling component for their systems, e.g., epidemiology, spatial pathology, traffic systems, location-based social networks, ride sharing apps, IoT platforms, etc.

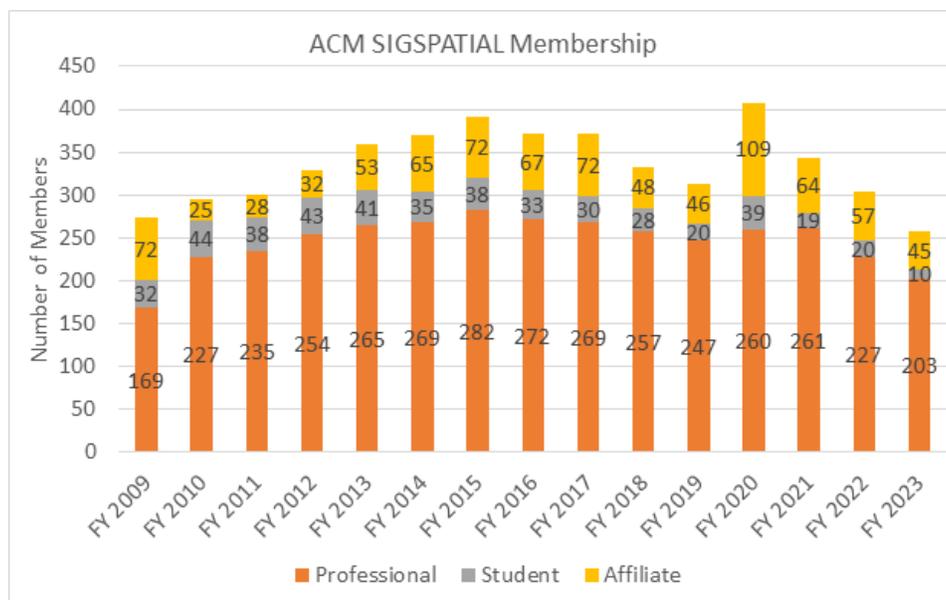
The categories of problems, as well as the plethora of novel solutions, address issues of high societal relevance in various application domains, arising due to the increasing availability of GPS data in ever-increasing numbers of mobile devices and smartphones. The use of navigation, routing and online mapping systems offered from companies such as ESRI, HERE, Microsoft (Bing Maps) and Google (Google Maps and Google Earth) in settings ranging from tourism, traffic management, emergency/disaster remediation, and agriculture only further accentuate the importance of the topics that define the main thrusts of the SIGSPATIAL conference and workshops. And, of course, spatial data analysis is key to studying pandemics such as COVID-19.

SIGSPATIAL continues to offer an annual conference, focusing on high-quality research papers, along with systems, industrial, and vision papers. It also includes a set of diverse workshops, the numbers of which have been steadily growing (e.g., there were 13 workshops collocated with the SIGSPATIAL 2022 conference). These are differentiated from other venues in the area by focusing on the computational and system aspects of the field rather than on the available commercial products.

A key aim of the SIGSPATIAL leadership is keeping the flagship conference – the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL) – affordable and thus accessible. This way we believe it can continue to be of good value to its attendees and be competitive not only in quality but also price wise with related conferences. The early registration fees for ACM SIGSPATIAL 2022 were only \$400 for ACM members; \$450 for non-ACM members; and \$300 for students. And, for only an additional \$150 more (\$100 for students), the community can also attend any of the workshops that are collocated with the conference.

Achieving low fees has been made possible by active solicitation of sponsor contributions and a great deal of vigilance and active involvement of the Organizing Committee, from venue selection to many other logistics of the event. This, in turn, enables a reduced financial burden in terms of contractual obligations when planning the conference. In addition, it also enables a healthy build-up of our financial reserves.

Our SIG membership remains strong. Below is a chart showing our total membership and breakdown into membership categories for fiscal years 2008 to 2023.



We see a consistent membership drop from FY 2020 to FY 2023. Last year we gave out about 70 student travel grants. Most of them were for US\$ 1000 each and funded from our SIG’s budget. We had hoped this would help membership, but it apparently did not. This year we are offering free affiliate membership in SIGSPATIAL for anyone who registers for our conference. These memberships will be funded from our budget. We are hopeful this will turn around our decreasing membership numbers.

## 2. Describe your efforts related to Diversity, Equity, and Inclusion.

We have put significant effort over the past few years into promoting DEI among our leadership at all levels. One of four members of our previous SIG Executive Committee (July 2020 through June 2023) was a woman and two of four members of our current Executive Committee are women. We have tried, although unfortunately not always successfully, to have women on our conference leadership committees (general chairs and program chairs). We have actively recruited women and other members of underrepresented groups to serve in other roles for our conference.

We have also prioritized DEI in awarding student travel funds to our conference. This includes both the funds we get from NSF for student travel for US-based students as well as SIGSPATIAL funds for both US-based and international students.

We held the first female networking event at the SIGSPATIAL 2022, with 28 female researchers involved. Most attendees are current Ph.D. students in spatial science and computer science-related fields, but a postdoctoral, a master's student, and two high school students also joined the event. During this gathering, participants shared their experiences as female researchers from various computer science and geospatial communities. The main discussion topic was about how to build a career, manage time as a mom and Ph.D. student, and wisely handle difficult situations as minorities. From the discussion, participants felt more involved in the spatial community as female researchers. Jina Kim

and Min Namgung organized Spatial Women, abbreviated SpatialW, to stay connected with the attendees of the first networking event (see <https://spatialwomen.github.io/>). SpatialW aims to actively network with female researchers in computer science and spatial science, work with conference organizers to hold networking and educational events at various conferences, and offer career development mentoring and invited talks from senior researchers in related fields in academia and industry.

In the future, we plan to increase our DEI efforts in several ways. We hope to increase the number of DEI events at our conference. We are in the process of establishing a DEI Chair/Committee for our conference to plan and manage these events.

### **3. Provide a list of awards and recipients**

We now have two prominent and well-recognized awards in our portfolio: a 10-Year Impact Award and a Best Paper Award.

*10-Year Impact Award:* This annual award is given to a regular paper published at our main conference 10 years ago whose value and prescience have become apparent over a long period of time. It is chosen by a committee from our research community. In 2022, the award was given to the following paper from the 2012 conference:

“Location-Based and Preference-Aware Recommendation Using Sparse Geo-Social Networking Data” by Jie Bao (University of Minnesota, Minneapolis, MN, USA), Yu Zheng (Microsoft Research Asia, Beijing, China), and Mohamed Mokbel (University of Minnesota, Minneapolis, MN, USA).

*Best Paper Award:* This annual award is given to one of the full papers of the main conference that demonstrates a significant new research finding in the areas related to SIGSPATIAL. The winner of this award for 2022 was:

“Maximum Entropy Bridgelets for Trajectory Completion” by John Krumm (Microsoft Research, Redmond, WA, USA)

### **4. List significant papers on new areas that were published in proceedings**

In recent years, big foundation models have made rapid advancements, primarily in the fields of natural language processing and computer vision. Researchers have also begun exploring their applications in spatial-temporal data management domains. During the SIGSPATIAL 2022 conference, we observed several research efforts initiating research in this direction.

The paper "Towards a Foundation Model for Geospatial Artificial Intelligence" by Gengchen Mai (Stanford University), Chris Cundy (Stanford University), Kristy Choi (Stanford University), Yingjie Hu (University at Buffalo), Ni Lao (Google) and Stefano Ermon (Stanford University) was presented in the Vision session. The authors propose the concept of a multimodal foundation model capable of reasoning across diverse geospatial data types through geospatial alignments, while also discussing the distinct risks and obstacles associated with the development of such models in GeoAI.

The paper "Leveraging Language Foundation Models for Human Mobility Forecasting" by Hao Xue (University of New South Wales), Bhanu Prakash Voutharoja (University of Wollongong) and Flora D. Salim (University of New South Wales) introduces a novel approach that utilizes language foundation models for temporal sequential pattern mining, specifically in tasks like human mobility prediction. The research highlights the potential of pre-trained language models in forecasting temporal sequences and offers insights into innovative avenues for advancing human mobility prediction research.

The paper "When Do Contrastive Learning Signals Help Spatio-Temporal Graph Forecasting?" by Xu Liu (National University of Singapore), Yuxuan Liang (National University of Singapore), Chao Huang (University of Hong Kong), Yu Zheng (JD Technology), Bryan Hooi (National University of Singapore) and Roger Zimmermann (National University of Singapore) investigates the integration of contrastive learning to mitigate data scarcity in spatio-temporal graph forecasting powered by deep learning models. The introduction of diverse data augmentations and an extended contrastive loss further contribute to enhanced performance, offering insights into the potential of leveraging contrastive signals to address data limitations in this context.

Two new co-located workshops were held at the ACM SIGSPATIAL 2022 conference including:

- The 1st ACM SIGSPATIAL International Workshop on Spatial Big Data and AI for Industrial Applications (GeoIndustry 2022) which focused on bridging the gap between academia and industry, fostering collaboration and knowledge exchange to expedite the translation of research into practical impact. The workshop program featured a keynote talk by John Krumm (Microsoft Research), a keynote talk by Dieter Pfoser (George Mason University), and three paper presentations.
- The 1st ACM SIGSPATIAL International Workshop on Geospatial Knowledge Graphs (GeoKG 2022) which focused on the importance of geospatial information and principles in designing, developing, and utilizing geospatial knowledge graphs and other geospatial AI techniques. The workshop program featured a keynote talk by Craig A. Knoblock (University of Southern California) on "Building Spatio-temporal Knowledge Graphs from Historical Maps" and four paper presentations.

## **5. Describe conference activity**

ACM SIGSPATIAL 2022 was the 30th event of an annual series of symposia and workshops with the mission to bring together researchers, developers, users, and practitioners carrying out research and development in novel systems based on geo-spatial data and knowledge. 2022 was the 15th year that the conference was held under the auspices of the ACM Special Interest Group on Spatial Information – SIGSPATIAL. In 2022, the flagship conference was held in Seattle, Washington, USA from November 1 through November 4.

During the one-day workshops and the two-and-a-half-day single track conference, ACM SIGSPATIAL 2022 attracted 300 attendees. This was a very healthy turnout considering we were online the last two years due to the pandemic. While the 2022 attendance was below the 397 that attended the last time the conference was in person, in Chicago in 2019, we are very happy with the number of people that attended especially considering we were still in the late stages of the pandemic. In 2022, 60 attendees were from industry and 240 were

from academia. While this still represents a healthy participation by industry, it is relatively lower than pre-pandemic. The reason for this fall-off is not clear but perhaps companies were slower than academia in participating in conferences in person.

Papers were submitted and accepted in different categories. We received a total of 192 research and systems/industrial submissions out of which 49 were accepted as full 10-page papers, resulting in an acceptance rate of 26%. The remaining papers in the proceedings correspond to demos and posters, which had 4 pages.

Continuing tradition, ACM SIGSPATIAL 2022 had a GIS Cup programming contest. In 2022, this focused on the use of semantic segmentation for extraction of building footprint from a LiDAR point cloud, which is a central problem for the creation of 3D maps. Seven teams competed and five of them passed the baseline, which was based on the Microsoft U.S. Buildings Footprint dataset. The three top teams were invited to present a short paper at the main conference and received awards. In addition, the authors of the winning teams received travel grants donated by W. Randolph Franklin. AT&T provided sponsorship for the SIGSPATIAL Cup and the awards for the winners.

The 2022 conference again held a Student Research Competition (SRC) that aimed at providing a forum for undergraduate and graduate students to share their research results and exchange ideas with other students, judges, and conference attendees. This year, nine papers (including five graduate student papers and four undergraduate student papers) were selected for presentation during the conference and were further assessed for advancement to the next round of the competition, the ACM Grand Finals.

Our reviewers put in a significant amount of effort in reviewing the papers and our hope is that the reviews were beneficial even to those authors whose papers were not accepted. In 2022, the technical program of the conference was decided in a two-stage process.

- (1) Each submitted paper was first reviewed by at least three members of a carefully chosen program committee (PC) consisting of experts in the relevant fields. Our PC had a total of 103 invited members from academia and industry, plus an additional 23 members who were designated as the Senior PC. The assignment of papers to reviewers followed a bidding stage, during which PC members expressed their preferences to review a particular submission. In addition to three reviewers from the PC, each paper was also assigned a designated Senior PC member who studied the reviews, discussed the merits of the submission with the reviewers, wrote a meta-review, and formulated an accept/reject recommendation.
- (2) We again implemented a rebuttal phase where the authors received preliminary versions of the reviews and were offered the opportunity to address the concerns raised therein by submitting a response. The reviews, meta-reviews, and accept/reject recommendations were then finalized, taking into account the author responses. The selection of papers to include in the conference program was ultimately made by the PC Chairs. Certain papers that were not accepted for the conference, with the permission of the authors, were forwarded to the conference's Workshop Chairs to be considered for inclusion in relevant workshops co-located with SIGSPATIAL. This is to promote good ideas that are not ready for a conference

presentation to be discussed during the workshop sessions which cover a vast array of emerging topics.

The ACM SIGSPATIAL 2022 conference had two distinguished speakers: Dr. Jack Cooper, Program Manager at IARPA,, who gave the first keynote presentation titled “Characterizing Human Activity in Spatiotemporal Data” and Dr. Siva Ravada, Vice President of Oracle Spatial & Graph technologies at Oracle, who gave the second keynote presentation titled “Geospatial Industry Trends, Directions, and Challenges”.

The 2022 conference was preceded by the following 13 co-located workshops:

- 5th ACM SIGSPATIAL Workshop on Advances on Resilient and Intelligent Cities (ARIC 2022)
- 15th ACM SIGSPATIAL International Workshop on Computational Transportation Science (IWCTS 2022)
- 6th ACM SIGSPATIAL Workshop on Location-based Recommendations, Geosocial Networks and Geoadvertising (LocalRec 2022)
- 5th ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery (GeoAI 2022)
- 6th ACM SIGSPATIAL International Workshop on Geospatial Humanities (GeoHumanities 2022)
- 4th ACM SIGSPATIAL International Workshop on APIs and Libraries for Geospatial Data Science (SpatialAPI 2022)
- 1st ACM SIGSPATIAL International Workshop on Spatial Big Data and AI for Industrial Applications (GeoIndustry 2022)
- 3rd ACM SIGSPATIAL International Workshop on Spatial Computing for Epidemiology (SpatialEpi 2022)
- 2nd ACM SIGSPATIAL International Workshop on Animal Movement Ecology and Human Mobility (HANIMOB 2022)
- 1st ACM SIGSPATIAL International Workshop on Geospatial Knowledge Graphs (GKG 2022)
- 5th ACM SIGSPATIAL International Workshop on GeoSpatial Simulation (GeoSim 2022)
- 10th ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data (BigSpatial 2022)
- 4th ACM SIGSPATIAL International Workshop on Spatial Gems (SpatialGems 2022)

With a large number of very generous corporate sponsors, we are pleased to be in a secure financial position. The list of sponsors for SIGSPATIAL 2022 included: Apple (Platinum Sponsors); and ESRI, Google, Oracle, and Wherobots (Bronze Sponsors). Many of these sponsors have supported the conference for multiple years. In addition, long-time SIGSPATIAL participant and contributor W. Randolph Franklin made the first ever private sponsorship.

## **6. Comment on special projects and non-conference programs that provided service to some part of your technical community**

In addition to the conference proceedings, SIGSPATIAL publishes the ACM Transactions on Spatial Algorithms and Systems (ACM TSAS) and the SIGSPATIAL Special Newsletter.

The ACM Transactions on Spatial Algorithms and Systems (ACM TSAS) is now in its 8th Volume. The current editorial board of ACM TSAS includes Walid G. Aref (Purdue University) as Editor-in-Chief, three Senior Associate Editors: Pankaj Agarwal (Duke University, USA), Dinesh Manocha (University of Maryland College Park, USA), and Mohamed Mokbel (University of Minnesota, USA) as well as 27 Associate Editors.

To strengthen the synergy between TSAS and SIGSPATIAL, we continue to publish in TSAS special issues of extended versions of the best-paper award nominees from the previous year's SIGSPATIAL conference. We also have two special issues related to the COVID-19 pandemic. The first is on Contact Tracing with Guest Editors: Mohamed Mokbel (University of Minnesota, USA), Demetris Zeinalipour (University of Cyprus, Cyprus), and Li Xiong (Emory University, USA), and was published in June 2022. The second ongoing special issue is on Understanding the Spread of COVID-19 with Guest Editors: Taylor Anderson (George Mason University, USA), Andreas Züfle (George Mason University, USA), and Song Gao (University of Wisconsin, USA).

In 2023, we have initiated two new, still ongoing, special issues: One on vision papers from pioneers in the field of spatial algorithms and systems, and the second on Machine Learning and Location Data. The Vision Special Issue is led by Guest Editors, Leila De Floriani (University of Maryland, USA), Mohamed Mokbel (University of Minnesota, USA), Cyrus Shahabi (University of Southern California, USA), and Walid Aref (Purdue University, USA), while the Machine Learning and Location Data Special Issue is led by Flora Salim (University of New South Wales, Australia), Renhe Jiang (University of Tokyo, Japan), and Mohamed Mokbel (University of Minnesota, USA).

We are striving to increase the visibility of ACM TSAS. Currently, we are getting a steady stream of submissions to the journal. We have managed to double the number of papers published per issue from around 3 papers per issue in 2018 to around 7-8 papers per issue in 2021-2023 due to the increase in the number of quality papers being submitted. Also, the number of paper submissions in 2023 is expected to be a record high since the start of ACM TSAS as it is expected to exceed 100 submissions. Thus far, as of the writing of this report (August 2023), the number of submissions is over 95 submitted articles. To serve the community better in keeping them up-to-date with emerging and hot topics, we have initiated an ongoing special issue track on survey papers in the field since 2022. We are consistently getting around 2 papers a year that survey hot topics in the area.

We continued to maintain the SIGSPATIAL Special Newsletter. This newsletter is supposed to have three issues per year (March, July, and November) typically publishing communications around the ACM SIGSPATIAL like papers from the student research competition, project and meeting reports as well as conference and workshop reports. In the year 2023, the SIGSPATIAL Special Newsletter, however, has not received the required attention from our community partly due to fewer meetings and due to many special issues from the aforementioned novel publications. We aim at recovering the SIGSPATIAL Special Newsletter to publish conference reports and additional communications. With increasing post-pandemic activities, we are convinced that the concept of this newsletter as an additional publication venue is valid.

**7. A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years**

We would like to increase our membership and conference attendance levels back to where they were pre-pandemic. We had a very successful in-person conference in 2022 (after being online for two years) but the number of attendees was down from the last in-person conference in 2019. One way to accomplish this is to continue providing travel funding to a significant number of students (this of course will also help engage future organizers and leaders of our community).

We also plan to increase industry involvement in our conference. This includes having industry researchers submit papers and attend our conference. We have a history of strong industry participation in our conference but we believe there is an opportunity to increase it due to the many applications of our technologies. We will also continue to increase industry sponsorship of our conference and this allows us to do things like provide significant travel support for students.

We also plan to continue to increase the diversity of our community. We are currently seeking to establish a DEI chair/committee at our ACM SIGSPATIAL conference.

**SIGUCCS Annual Report**  
**July 2022 – June 2023**  
**Submitted By: Lisa Brown, Chair**

### **SIG Health and Viability**

While the SIG is not back to pre-COVID health, we are much more optimistic about our future. The 2023 conference drew the expected attendance numbers and although smaller than pre-COVID conferences, we were satisfied with the event. Based on 2023, we decided that we could plan for and hold conferences in 2024 and 2025. The 2024 conference is scheduled and we are currently looking for a location/dates for 2025.

Additionally the current board agreed to extend their term for another three years (through 2026), allowing the team to work together to rebuild the SIG.

### **Efforts in Diversity, Equity and Inclusion**

We strive to have volunteers and members in leadership positions that represent diverse populations.

We recently updated our website to have a more inclusive language. Virtual platforms have been enhanced to include accessible tools.

We incorporated a DEI book choice, *Belonging at Work* by Rhodes Perry into our Book Club in early 2023.

Several presentations and panel sessions related to DEI were highly attended at the conference: Making Accessibility Accessible (Quick Tips for Making Inclusive Content), Out in Tech (An Open Discussion About Inclusive Workspaces), and Neurodiversity in the IT Workplace.

Our members have indicated that they have learned from these activities and shared what they have learned with their campus communities.

### **SIGUCCS Awards**

In 2022, we were honored to grant both the Hall of Fame and Penny Crane awards, along with Communication awards. These awards were recognized at our 2023 conference. Melissa Bauer was awarded with the Penny Crane Award for Distinguished Service. Hall of Fame awards were granted to the following people:

- Kathy Fletcher
- Tom Gerace
- Kendra Strode
- Scott Trimmer

We were also able to honor two of the 2020 Hall of Fame winners during our awards ceremony:

- Chris King
- Dan Herrick

Regarding communication awards:

- We received 33 entries from 17 nominators representing 8 different institutions.
- We awarded 7 Best of Category awards
- Best of Category winners represent 4 different institutions.

Winners of communication awards are represented on this site:

<https://siguccs.org/wp/participate/siguccs-awards/communication-awards/communication-award-recipient-2022/>

## **Significant Published Papers**

**Our members published the following papers (13) for the 2023 conference:**

Karl Owens. 2023. SIGUCCS User Support Academy. In Proceedings of the 2023 ACM SIGUCCS Annual Conference (SIGUCCS '23). Association for Computing Machinery, New York, NY, USA, 5–7. <https://doi.org/10.1145/3539811.3579583>

Yong Jin, Satoshi Matsuura, Takao Kondo, Tatsumi Hosokawa, and Masahiko Tomoishi. 2023. A Lightweight Abnormality Detection Mechanism by Stray Packets Analysis. In Proceedings of the 2023 ACM SIGUCCS Annual Conference (SIGUCCS '23). Association for Computing Machinery, New York, NY, USA, 9–11. <https://doi.org/10.1145/3539811.3579559>

Nick Pistentis. 2023. One Institution's Approach to Collaborative IT Strategic Plan Development. In Proceedings of the 2023 ACM SIGUCCS Annual Conference (SIGUCCS '23). Association for Computing Machinery, New York, NY, USA, 15–17. <https://doi.org/10.1145/3539811.3579561>

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## **Conference Activity**

The 2023 conference was held from March 26 - March 30, 2023 in Chicago, IL. For this conference we used the morning for full group sessions and the afternoons for breakout sessions. The morning consisted of a general session and two panel presentations (one panel of Chicago-based Chief Information Officers, and another panel of IT managers from our community). We also used the morning to hold our lightning talks - there were 9 of these short presentations over two mornings. Tuesday evening was used to host our poster session and reception. Nine posters were presented. Afternoons hosted our breakout sessions which consisted of nineteen presentations or panel sessions. We ended the conference with an hour long listening session.

## **Non-conference Activities in Service to SIG Members**

Beyond the in-person conference, the SIG continues to engage the community virtually in a number of ways.

### **Book Club - Professional Development**

Book club meetings are held every other month and are attended by anywhere from 8-15 persons. Books for the 2022-2023 year include:

- *The Manager's Path: A Guide for Tech Leaders Navigating Growth & Change* Camille Fournier (September 2022)
- *Leading from the Middle: A Playbook for Managers to Influence Up, Down, and Across the Organization* Scott Mautz (November 2022)
- *Tranquility by Tuesday: 9 Ways to Calm the Chaos and Make Time for What Matters* Laura Vanderkam (January 2023)
- *Belonging At Work: Everyday Actions You Can Take to Cultivate an Inclusive Organization* Rhodes Perry (March 2023)
- *Creative Acts for Curious People: How to Think, Create, and Lead in Unconventional Ways* Sarah Stein Greenberg (May 2023)
- July 2023 - *Chief Joy Officer: How Great Leaders Elevate Human Energy and Eliminate Fear* Richard Sheridan

Additional books for September and November 2023 are already selected.

- September 2023 - *The Power of Writing It Down: A Simple Habit to Unlock Your Brain and Reimagine Your Life* Allison Fallon
- November 2023 - *Mind over Monsters: Supporting Youth Mental Health with Compassionate Challenge* Sarah Rose Cavanagh

### **Meetups - Casual Conversations**

"Meetups" were offered monthly through March 2023 with various themes. Attendance at these meetings range from 15-25 persons.

- July 2022 - Team Building for Employee Morale and Productivity
- August 2022 - Welcome to the Service Desk - Recruit, Retain, Onboard Student Workers
- September 2022 - Canceled
- October 2022 - Halloween Party & Scary Tech Stories
- November 2022 - What's in your Hybrid Work Bag?
- December 2022 - Retrospective
- January 2023 - Setting Yourself up for Success
- February 2023 - Exciting Tech Trends for 2023

### **Conference Preparation and Community Awareness**

Additionally, in preparation for the 2023 conference, we held a webinar on Creating and Effective Poster in January 2023 and a webinar called Getting Ready for SIGUCCS 2023 in March.

An open board meeting was held by Zoom in April 2023. Additionally a Zoom session talking about the future of the Affinity Group project was held.

## **Affinity Groups - Casual Conversation and Professional Development**

SIGUCCS began holding Affinity Groups in May 2023. These groups encompass the following interests: Professional Development, Educational Technology, and User Services. Each group meets once a month on Zoom. Attendance at these meetings ranges from 5-25 people.

### **Key Issues for the next 2-3 Years**

- Membership has declined. The greatest benefit to being a member is reduced conference registration. Conference attendance in 2023 was smaller than pre-COVID years. Membership has not increased.
- Marketing our organization outside of those already familiar is not easy. Recruiting new members into the organization or even to the conference is difficult.
- Volunteers for board positions and conference positions are recruited from those that attend. Navigating the situation with COVID made engaging with new people more difficult.
- Our members are IT support staff who have been severely affected by the pandemic with increased demands on technology for remote and virtual work and instruction and changing campus technology needs.
- Higher education salaries have not been keeping up with the external companies and opportunities for remote work external to higher education has increased. Many higher education IT staff have left our industry to higher paying jobs outside of higher education - thus our membership pool is smaller.
- Travel budget/restrictions are still in place at many universities. Since so many conferences were offered virtually, institutions have cut back on the ability for staff to travel for conferences. In our line of work, getting away from the office is critical to being able to participate fully.
- Finding conference locations based on the political climate is more difficult with the bans on travel to states with discriminatory practices (for example, California state schools have currently banned travel to 22 states). Additionally, making sure that our attendees feel supported and safe traveling to the selected conference location is of concern.
- Inflation has increased costs for hosting making it more difficult to find locations that are affordable for a small SIG.

**SIGWEB Annual Report**  
**July 2022 – June 2023**  
**Submitted By: Eelco Herder, Chair**

Peter Brusilovsky, Chair until July 2023  
Eelco Herder, Chair starting July 2023

**What ACM wants:**

Comment on the ways in which the SIG is a healthy and viable organization

Describe your efforts related to Diversity, Equity, and Inclusion.

Provide a list of awards and recipients

List significant papers on new areas that were published in proceedings

Describe conference activity

Comment on special projects and non-conference programs that provided service to some part of your technical community

A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.

**Mission Statement**

SIGWEB, the ACM Special Interest Group on Hypertext and the Web, is a community of scholars, researchers, and professionals who study and use the concepts and technologies of linked information that were originally conceived as hypertext and are most famously realized on the Web. The SIGWEB community's interests range widely and include hypertext in all its forms, social networks, knowledge management, document engineering, digital libraries, and the Web as both an information tool and a social force. SIGWEB encourages innovative research, open discussion of new ideas and the development of methodologies and standards through conferences and a variety of communication resources for its members and the world.

**SIGWEB Conferences and SIG Vitality**

SGWEB organizes a wide range of events. Our 100% events have been stable for many years. ACM Hypertext – SIGWEB' long-time flagship conference – celebrated its 30<sup>th</sup> anniversary in September 2019 and ACM DocEng celebrated its 20<sup>th</sup> anniversary in September 2020. ACM WebScience just celebrated its 15<sup>th</sup> anniversary this year. The Web Conference (formerly WWW), which became a SIGWEB conference last year, celebrated its 30<sup>th</sup> birthday in 2021. In addition, SIGWEB co-sponsors the CIKM, JCDL, WSDM, and UMAP series and works with several other conference series “in cooperation”.

Starting Summer 2022, our core and in-coop conferences gradually started returning to in-person mode again. Web Science, Hypertext and UMAP 2022, collocated in Barcelona from June 26 to July 7, were still organized in a hybrid setting, with still some covid restrictions and cautions in place. Since then, it has become clear that the different communities in SIGWEB felt a strong preference to return to the traditional model of in-person conferences

- despite the intentions developed during the covid pandemic to convert to hybrid conferences, in order to make conferences more inclusive and affordable, and to reduce unnecessary travel.

While recognizing and understanding the advantages of in-person conferences in terms of participant experience and networking effects, and while observing the growing resistance against the term 'hybrid', SIGWEB still encourages conferences to offer part of their programs as 'in-person-plus'; for instance, workshops may attract more submissions and participants, saving precious time and environmental footprints of authors who otherwise might have traveled to conference for just one workshop day - or would not have submitted at all. Most notably, the HUMAN'23 workshop has successfully adopted this practice.

Every year, SIGWEB holds Town Halls at two of its 100% sponsored conferences that are managed directly by SIGWEB – Hypertext and DocEng. The goal of these sessions is to introduce both SIGWEB and ACM to conference participants and to engage in a discussion on what the SIG (and what ACM) can do to help advance the state of the art within our interest domain, as well as to advance the careers of our members. Last month, a special Town Hall was organized at UMAP 2023, during which the baton was handed over from past chair Peter Brusilovsky to the new chair, Eelco Herder. This brief ceremony also served to increase visibility of SIGWEB in the UMAP community, now that the charitable corporation behind the conference series takes steps to officially dissolve itself and to continue as a regular steering committee under auspices of SIGWEB.

Financially, SIGWEB is in an excellent position to develop and experiment with new initiatives to help promote a vibrant scientific community within our domain. We have excellent conferences, we have existing partnerships with other SIGs and we have an extensive network of in-coop conferences that help ensure our vitality.

## **Fair Access Initiative and Inclusion Efforts**

SIGWEB conferences increasingly adopt the practice of having Inclusion and Accessibility Chairs, who are responsible for overseeing any conference practices that may have negative consequences or cause barriers for certain community members. In addition, as required by ACM, all SIGWEB core conferences inform their participants regarding the ACM Code of Conduct.

In the past year, SIGWEB did inform conference organizers about our Fair Access Initiative, with dedicated SIGWEB funds for the benefit of researchers from underrepresented regions, but with only limited success. Several conferences appeared not to consider fair access as a priority and appeared to consider it as an additional burden in a year in which conferences needed to reinvent themselves after several years of online and hybrid editions. Still, some successes can still be reported: for instance, TheWebconf offered free virtual participation for researchers from underrepresented regions<sup>3</sup>.

SIGWEB will continue to promote the fair access initiative, presenting conference organizers with several models for affordable or free online or in-person participation. We believe that this investment - in money as well as in time - is strongly needed in order to further diversify and enrich our research communities.

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<sup>3</sup> <https://www2023.thewebconf.org/attendees/virtual-participation-award/>

In addition to the Fair Access work, SIGWEB is exploring a mechanism of chapters as a way to engage members of specific underrepresented geographic communities. In 2020, SIGWEB debuted its first chapter in China, an important region with rapidly increasing interest in the Web, social media, and other SIGWEB core topics. The experience of this first chapter will help us in planning similar actions in other currently underrepresented regions such as Latin America and Central Asia

## **SIGWEB Awards**

At ACM UMAP 2023, the following two awards were presented:

- *Best Paper Award*: Combining Reinforcement Learning and Spatial Proximity Exploration for New User and New POI Recommendations. David Massimo & Francesco Ricci
- *James Chen Best Student Paper Award*: Combining Graph Neural Networks and Sentence Encoders for Knowledge-aware Recommendations by Giuseppe Spillo, Cataldo Musto, Marco Polignano, Pasquale Lops, Marco de Gemmis & Giovanni Semeraro.

At ACM JCDL 2023, the following two awards were presented:

- *Best Paper*: Christof Bless, Ildar Baimuratov and Oliver Karras, SciKGT<sub>X</sub> - A LaTeX Package to Semantically Annotate Contributions in Scientific Publications.
- *Best Student Paper*: Lesley Frew, Michael Nelson and Michele Weigle, Making Changes in Webpages Discoverable: A Change-Text Search Interface for Web Archives.

At TheWebConf 2023, the following awards were presented:

- *Best Paper Award*: Hays, Chris, Zachary Schutzman, Manish Raghavan, Erin Walk, and Philipp Zimmer. "Simplistic Collection and Labeling Practices Limit the Utility of Benchmark Datasets for Twitter Bot Detection
- *Best Student Award*: Jiang, Song, Qiyue Yao, Qifan Wang, and Yizhou Sun. "A Single Vector Is Not Enough: Taxonomy Expansion via Box Embeddings."

At ACM CIKM 2022, the following two full paper awards were presented:

- Zhou, Honglu, et al. D-HYPR: Harnessing Neighborhood Modeling and Asymmetry Preservation for Digraph Representation Learning.
- Ren, Jiaqian, Lei Jiang, Hao Peng, Lingjuan Lyu, Zhiwei Liu, Chaochao Chen, Jia Wu, Xu Bai, and Philip S. Yu. "Cross-network social user embedding with hybrid differential privacy guarantees.

At ACM Hypertext 2022, the following two named awards were presented:

- *Douglas Engelbart Best Paper Award*: Mark Bernstein and Stee McMorris "Links Of Darkness: Hypertext And Horror"
- *Ted Nelson Newcomer Best Paper Award*: Fedor Vitiugin and Carlos Castillo "Cross-Lingual Query-Based Summarization of Crisis-Related Social Media: An Abstractive Approach Using Transformers"

## **Recent Highlights**

- In 2022, SIGWEB organized a sequence of three co-located SIGWEB conferences in Barcelona, Spain from June 26 to July 7, 2022, in a successful and enjoyable hybrid setting.
- In 2023, SIGWEB conferences mainly took place in an in-person setting, with various models of online participation.
- The Web Conference (formerly WWW), the most important event for researchers in the area of the Web, is now added to the list of SIGWEB-sponsored conferences. The first two editions (2022 in Lyon, France, 2023 in Austin, Texas) were successfully organized.
- An increasing number of SIGWEB conferences (Hypertext, DocEng, UMAP, Web Science) piloted different versions of the Fair Access initiative to bring attendees from underrepresented regions to SIGWEB events.
- Social media coverage of SIGWEB activities has been expanded.

## **Volunteer Involvement**

SIGWEB realizes that involving volunteers in SIG activities is a non-trivial task. Many of our members have been with the community for many years and have become accustomed to operating within a 'well-oiled' environment. At the SIG business meetings held at each of our fully-supported conferences, it is clear that motivating our members to take leadership roles is both an opportunity and a challenge.

SIGWEB regularly provides funding for student (and possibly senior) travel. SIGWEB directly contributes to the student travel programs for our 100% supported conferences (Hypertext, DocEng, Web Science) and the UMAP conference, which is co-sponsored with SIGCHI. In 2022 we also contributed to student travel for CIKM 2022 co-sponsored with SIGIR.

Over the last two years, SIGWEB officers invested a considerable amount of time to revive and improve SIGWEB's reach to its members and the broader community through publicity channels and Social Media. Most importantly, as the organizers of the ACM conference on Hypertext and Social Media, we decided to "walk out talk" and invest in establishing an exemplary presence in Social Media.

To keep stronger ties with our conference series, SIGWEB instituted the mechanism of conference liaisons. For each of our sponsored or co-sponsored conference series, we worked with its steering committee or similar body to nominate one representative, usually a member of the series SC to serve as the series liaison. The liaisons join SIGWEB officers and members at large to form the SIGWEB Executive committee. Within the reporting period, SIGWEB considerably updated its Executive committee, ensuring the participation of active and well-informed members.

The elected volunteer leaders of the SIG at the end of FY 2023 were:

- Chair: Eelco Herder
- Vice-Chair: Irvin King
- Secretary/Treasurer: Alexandra Bonnici
- Past Chair (2019-2023): Peter Brusilovsky

The appointed SIGWEB Executive Committee has the following members:

- Donna Cappo - ACM Program Coordinator

- Charlie Hargood - Information Director
- Ethan Munson - DocEng Liaison
- Claus Atzenbeck - Hypertext Liaison
- Cathy Marshall - JCDL Liaison
- Charles Nicholas - CIKM Liaison
- Maria Bielikova - UMAP Liaison
- David Millard - Web Science Liaison
- Mounia Lalmas - WSDM Liaison
- Jessica Rubart - Member at Large

Additional volunteers working with the SIG are:

- Martin Vesely - Newsletter Editor
- Daniel Roßner - Webmaster
- Helma Torkamaan - Social Media Coordinator
- Nasim Sonboli - Social Media Coordinator

## **Challenges and Opportunities**

SIGWEB continues to offer its members a compelling series of conferences that are supported in whole or in part by the SIG. Each of these conferences has a loyal following and is able to provide compelling scientific content. SIGWEB has a nice balance of small and large events, meeting the needs of young and established researchers. Some of our conferences are mature, others are working to find a longer-term identity.

Following several years of online and hybrid conferences, and in times of political and societal uncertainty, SIGWEB believes that conferences should provide increased attention to diversity and inclusiveness. This does not only include raising awareness of codes of conduct among participants, but also to proactively ensure that the conferences will be accessible and affordable for a wide global community - overcoming travel restrictions, financial inequalities, mental and physical challenges, and other possible issues.

With its portfolio of core and in-coop conferences, SIGWEB is in a good position to propose and evaluate several models for inclusiveness. This may be achieved partially by opening up the program to online participants, to reach out to those who are not able or allowed to travel to the conference venue, as well as by providing travel grants to those who need financial support in order to attend. However, in the past years, we realized more and more that it is not just a matter of investing money, but that active promotion and support is needed in order to make diversity and inclusiveness a priority and a realistic goal.

One of the constant challenges for SIGWEB (and ACM) is to design a total benefits package that makes a compelling personal offer for new members. This package should include sufficient financial and scientific incentives (such as having advance registration discounts only available to existing SIG members, plus unlocking special features of the DL that are available to members on top of any benefits from existing [institutional] subscriptions), and it

should provide incentives for continued long-term membership (such as access to funds to support local events or perhaps scaled discounts to SIG conferences).

We realize that these concerns are not unique to SIGWEB and look forward to actively coordinating our efforts with other SIGs. One action that we took on our side during the reporting period is a “trial membership”. We decided to re-introduce the approach used by SIGWEB a few years ago: offer free membership to all registered attendees of our “flagship” events – Hypertext and DocEng. We hope that access to the Hypertext Bulletin and mailing lists could create a feeling of belonging that could be extended for years beyond the trial.