

# SIGARCH Annual Report

July 2023 – June 2024

## 1. Health and Viability

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.

As later sections of the report will show, our conference attendance and paper submission rates are very healthy. We maintain a healthy fund balance that allows us to support a range of activities. SIGARCH members are actively engaged in our various activities and the SIG continues to perform well.

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

Efforts to support diversity, equity and inclusion have been a key focus of SIGARCH in recent years. We continue to maintain a wide range of programs to build and maintain an inclusive community.

- (1) **Student mentoring:** “Meet a Senior Architect (MASA)” runs 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.
- (2) **Women In Computer Architecture (WICArch):** WICArch became a SIGARCH sponsored subcommittee 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. In 2024, they launched an early career travel grant program that supports the one WICARCH member to attend ISCA. In return for receiving the travel, the WICARCH member must organize a networking or professional development activity for WICARCH at the conference. The inaugural recipient was Tamara Lehman.
- (3) **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.

- (4) **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 2024, the workshop was held at ISCA in Buenos Aires. Given this, the focus was on schools in South and Central America. Over 25% of attendees in-person attendees came from these locations. The 2024 edition supported 37 in-person attendees and 80 virtual attendees from 14 countries and 23 schools (in person). Countries outside of North America included Chile, Argentina, Peru, Brazil, Poland, Vietnam, Ethiopia and others.
- (5) **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 2024, we continued supporting our student members through the travel grants at sponsored conferences.
- (6) **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 2024, we continued to support CASA, 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).
- (7) **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.

### 3. Award recipients

We have a number of awards that are given annually either by ACM/IEEE directly, by SIGARCH alone, or SIGARCH together with TCCA. Martha Kim 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. José Martinez 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 2024 recipient was

Wen-mei Hwu for “For seminal contributions to architectures, compilers, and adoption of multiple generations of processors, including superscalar, VLIW, and GPUs.”

**(2) SIGARCH Maurice Wilkes award:** This is the most prestigious award given to a researcher in the first 20 years of their career. The 2024 recipient was Reetuparna Das for “contributions to in-memory computing.”

**(3) SIGARCH/TCCA influential ISCA paper award:** In the past year, SIGARCH and TCCA agreed to modify the terms of this award. The new award proposal was approved by the SGB Awards committee and the ACM Awards committee. Previously, this award had recognized a paper from the ISCA 15 years earlier. Starting in 2024 and moving forward, the Influential Paper award will recognize a paper from ISCA 20 years ago +/- 2 years. This sliding window will allow papers to be eligible across multiple years and is more consistent with Influential paper awards given in other computer architecture conferences such as IEEE/ACM International Symposium on Microarchitecture (sponsored by SIGMICRO) and IEEE International Symposium on High Performance Computer Architecture (sponsored by TCCA). The 2024 recipient was “Exploiting ILP, TLP, and DLP with the polymorphous TRIPS architecture” by Karthikeyan Sankaralingam, Ramadass Nagarajan, Haiming Liu, Changkyu Kim, Jaehyuk Huh, Doug Burger, Stephen W. Keckler, and Charles R. Moore which originally appeared in ISCA 2003.

**(4) ASPLOS influential paper award:** This award recognizes ASPLOS papers from 10 or more years ago. The 2023 recipients were “DianNao: a small-footprint high-throughput accelerator for ubiquitous machine-learning” by Tianshi Chen, Zidong Du, Ninghui Sun, Jia Wang, Chengyong Wu, Yunji Chen, Olivier Temam from ASPLOS 2014, “Paragon: QoS-Aware Scheduling for Heterogeneous Datacenters” by Christina Delimitrou, Christos Kozyrakis from ASPLOS 2013, and “ELI: bare-metal performance for I/O virtualization” by Abel Gordon, Nadav Amit, Nadav Har’El, Muli Ben-Yehuda, Alex Landau, Assaf Schuster, Dan Tsafir from 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 2024 recipient was Timothy Pinkston for “decades of exemplary research service spanning computer architecture and the wider research community via his leadership at NSF, ACM, and broadening participation.”

**(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 2024 recipient was Tanvir Ahmed Khan from University of Michigan (advised by Baris Kasikci) for “Rescuing Data Center Processors.” The award citation is “For proposing system interfaces for software to efficiently identify hardware inefficiencies and for designing architectural abstractions for software to effectively avoid them, accelerating datacenter processing.” Honorable mention went to Poulami Das from Georgia Tech (advised by Moin Qureshi) for “Software and Architecture Techniques for Improving Fidelity of Emerging Quantum Computers” with the award citation “For developing software and architecture techniques to increase the throughput and reliability of emerging quantum computers.”

**(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. Papers nominated this year were “GenDP: A Framework of Dynamic Programming Acceleration for Genome Sequencing Analysis,” by Yufeng Gu, Arun Subramaniyan, Tim Dunn, Alireza Khadem, Kuan-Yu Chen, Somnath Paul, Md Vasimuddin, Sanchit Misra, David Blaauw, Satish Narayanasamy, Reetuparna Das (ISCA 2023), “LeCA: In-Sensor Learned Compressive Acquisition for Efficient Machine Vision on the Edge,” by Tianrui Ma, Adith Jagadish Bolor, Xiangxing Yang, Weidong Cao, Patrick Williams, Nan Sun, Ayan Chakrabarti, Xuan Zhang (ISCA 2023), and “Pond: CXL-Based Memory Pooling Systems for Cloud Platforms,” by Huaicheng Li, Daniel S. Berger, Lisa Hsu, Daniel Ernst, Pantea Zardoshti, Stanko Novakovic, Monish Shah, Samir Rajadnya, Scott Lee, Ishwar Agarwal, Mark D. Hill, Marcus Fontoura, Ricardo Bianchini (ASPLOS 2023).

**(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 2024.

**(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’24, we mourned the passing of several significant members of our community including Arvind, Professor at MIT, Lynn Conway, Professor Emerita from University of Michigan, Robert Dennard of IBM, and Luiz Barroso of Google. Joel Emer, Derek Chiou, Partha Ranganathan, Valeria Bertacco and Pradip Bose gave tribute. SIGARCH is grateful to ACM for recognizing the broad legacy of Luiz Barroso with their newly announced award in his name.

#### 4. Significant papers published in proceedings

As noted above, we continue to nominate multiple papers each year as CACM Research Highlights representing some of significant work being published in our community. As later sections indicate, submission rates for our top conferences continue to increase and ASPLOS has published a record number of papers this year. The computer architecture community continues to publish high impact work at the intersection of architecture, systems, programming languages, devices, and machine learning among other topics.

#### 5. Conference Activities

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 51st ISCA was held in Buenos Aires, Argentina in June 2024 and marked the first time ISCA has been hosted in South America. The conference featured 10 workshops, 13 tutorials, three keynotes, an industry track session, and 18 technical paper sessions (with 423 papers submitted and 83 accepted, a slight increase from last year). The credit for the success of ISCA 2024 also goes to the 430 in-person participants from all over the world, and to an equally passionate group of organizers who raised \$150K in industrial sponsorship funds for the

conference during this difficult financial year for our industry. With additional funding from SIGARCH, TCCA, and NSF, ISCA'24 provided student travel grant support to 78 students. An additional 5 companion and childcare assistance travel grants were provided to attendees.

**(2) ASPLOS:** ASPLOS'24 was held in San Diego, California. The conference was run for the second 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. In the first year, 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. In the second year, this multi-deadline process increased the number of submissions an additional 57% to 922 total submissions across three deadlines. Of those 922 submissions, 170 were accepted to appear at ASPLOS'24 along with an additional 23 papers that were accepted with major revisions from ASPLOS'23 and appeared at ASPLOS'24. This large program of 193 papers necessitated 4 parallel paper tracks over 3 days. ASPLOS'24 papers given a major revision decision in the final (fall) cycle will appear at ASPLOS'25 is accepted upon re-review. The program included four keynotes, thirteen workshops, and ten tutorials and had a total of 806 in-person and 28 remote attendees.

## 6. Special Projects

Boris Grot continues to lead the communication team. The communication team has welcomed new membership this year including Adarsh Patil as content editor (for the website, announcements, and the newsletter), Elba Garza and Jonathan Balkind as social media editors (we've transitioned our social media presence away from X to Mastodon and LinkedIn), and Jayneel Gandhi remains 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. SIGARCH gratefully acknowledges the members of the communication team that concluded their service during 2023-2024 including Adrian Sampson (social media, now an elected member of the SIGARCH EC) and Akanksha Jain (content editor).

**(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 [comparechpodcast.podbean.com](https://comparechpodcast.podbean.com). In 2024, the podcasts enjoyed 16,200 downloads, a 40% year-to-year increase.

**(2) Computer Architecture Today (CAT):** In 2024, CAT continued serving as a successful platform for our community members and those in related fields to discuss diverse topics of interest. We welcomed a new blog editor, Dmitry Ponomarev and thank Brandon Lucia (editor) and Christina Delimitrou (associated editor) for their service. In the past year, CAT featured 25 new blog posts with over 101K views.

We continue to support initiatives from the previous EC aimed at improving our communities overall health and maintaining trust in our review 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 are continuing to work on the launch of 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'25. We are also in touch with ACM to make this platform available to other SIGs.

## 7. Key Issues

We have concerns that our SIG members are not well-aware or well-prepared for the transition to ACM Open. We have messaged to our members via our SIGARCH Business Meeting about the upcoming transition and encouraged members to determine if their institution is participating and to reach out to their library if they have not yet signed up.

As noted above, ASPLOS has grown substantially in submissions in the past year. This has created a very high workload on program chairs and program committee members and reviewers. We are facing scalability issues in terms of scaling the review workload while maintaining a fair and consistent process and also scaling up the conferences themselves in terms of increasing the number of parallel tracks.

Finally, industrial sponsorship of conferences continues to be tight due to current economic conditions. This coupled with increasing hotel costs following the pandemic have placed a burden on organizers to put together a conference experience that our attendees will appreciate while controlling costs. We are reluctant to raise conference registration rates as they are already quite high. Furthermore, the increasing burden of organizing our growing conferences during financially challenging times has made the role of General Chair less attractive to our members and recruiting future general chairs may be challenging.

## 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 liaison Katie Balben, for her support and for graciously handling the increased workload.

Respectfully submitted,

Natalie Enright Jerger, Chair

On behalf of the SIGARCH Executive Committee

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