

2020 SIGDA Annual report

Drafted by

SIGDA Executive Committee Members

SIGDA has been a vibrant special interest group which sponsors and organizes multiple activities benefiting the design and design automation community. Due to the outbreak of coronavirus (COVID-19), this past year has presented special challenges but also some good opportunities for hosting virtual events and outreach. 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 under-represented 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). Unfortunately, due to COVID, the committee has cancelled planned 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. The duties of 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 25th, 2021. The new SIGDA EC is in the process of vetting the nominations.

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 2021 Pioneering Achievement Award winner is Professor Jacob A. Abraham, UT Austin, *for pioneering and fundamental contributions to manufacturing testing and fault-tolerant operation of computing systems..*

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 2020 goes to J. Waicukauski, E. Lindbloom, B. Rosen and V. Iyengar for their paper "Transition Fault Simulation," *IEEE Design & Test of Computers*, Volume: 4, Issue: 2, pp. 32-38, April 1987.

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 2021 ACM Outstanding Ph.D. Dissertation Award in Electronic Design Automation is Ahmedullah Aziz, for his dissertation "Device-Circuit Co-Design Employing Phase Transition Materials for Low power Electronics", Purdue University, Advisor: Sumeet Gupta.

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 2021 goes to Zheng Zhang, University of California, Santa Barbara.

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 career in extraordinary services to promoting, leading, or creating ACM/SIGDA programs or events.

- The 2020 SIGDA Distinguished Service Award recipients are
 - Deming Chen, University of Illinois Urbana-Champaign, *for distinguished contributions to the design automation and reconfigurable computing communities, and*
 - Evangeline F. Y. Young, Chinese University of Hong Kong, *for outstanding leadership in promoting diversity in the ACM/SIGDA community.*

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 2021 SIGDA Service Award goes to Bei Yu, Chinese University of Hong Kong, *for service as SIGDA Web Chair from 2016 to 2021, SIGDA Student Research Competition Chair in 2018 and 2019, and other SIGDA activities.*

SIGNIFICANT PAPERS

The paper below received the 2021 ACM TODAES Best Paper Award. The paper significantly advances the area of system-on-chip verification.

- Sumit K. Mandal, Ganapati Bhat, Janardhan Rao Doppa, Partha Pratim Pande, Umit Y. Ogras, “An Energy-Aware Online Learning Framework for Resource Management in Heterogeneous Platforms,” ACM Transactions on Design Automation of Electronic Systems, Volume 25, Issue 3, May 2020, Article No.: 28, pp 1–26.

INNOVATIVE PROGRAMS

SIGDA devoted significant efforts to improve 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.

Design Automation WebiNar (DAWN)

Design Automation WebiNar (DAWN) has organized three webinars in August, September, and December 2020. The topics cover hardware security, manuscript publishing, and quantum computing. More details about DAWN can be found at: www.eda-dawn.org.

Mini Workshop on Holding Virtual Conferences

SIGDA held virtually (typically taking place at ICCAD as an in-person meeting) the annual conference representative meeting on June 16th, 2020 for SIGDA-sponsored conferences. The meeting was organized as a mini workshop. The particular focus of this mini workshop was to support conferences with their plans to go virtual. Since there was not much experience available, this event was planned as a platform to exchange ideas and experiences with various virtual formats. During the workshop, conferences that already had their events virtually shared their experience while others presented their virtual plans. It became clear that there is no solution that fits all, mainly because the size of each event is quite different. The feedback we received indicates that this meeting was a helpful first step and platform for exchanging ideas/experience to plan and conduct virtual events. This year's ConfRepMeeting will be organized by the new SIGDA Conference Chair.

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 more general appeal to help promote research in the design automation field.

OUTREACH ACTIVITIES

Because the flagship conference of SIGDA, Design Automation Conference (DAC) is postponed to December, all SIGDA sponsored activities at DAC including Ph.D. Forum, Design Automation Summer School, University Demo, Early Career Workshop and Richard Newton Fellowship are delayed. The Cadathlon at International Conference of Computer-Aided Design (ICCAD) was cancelled last year due to the pandemic; however the ACM Student Research Competition (SRC) was held. A total of 32 students (6 undergraduate and 26 graduate students) participated in it, and the top three from each category advanced to the ACM Grand Finals. The Ph.D. Forum at Design, Automation, Test in Europe Conference received a total of 39 submissions out of which 24 contributions were accepted based on 146 reviews from 18 PC members. The Student Research Forum (SRF) at Asia and South Pacific Design Automation Conference (ASPDAC) 2021 accepted 28 participating students from Asia, Europe and North

America (doubled compared to 2020) and there were over 110 participants from all the continents (more industry experts were able to join the forum due to the easier virtual format).

Besides the above activities, SIGDA communicates using SIGDA E-News.

KEY ISSUES FACING SIGDA

1. The transition to virtual formats for conferences during COVID, opens new opportunities and challenges that need to be pursued. The transition to virtual format for exhibits remains a challenge and has the potential to be a significant financial stress on SIGDA, if virtual format continues.
2. The impact of co-location of the Design Automation Conference with SEMICON West, which was delayed due to COVID, needs to be evaluated. With proper attention, this has the potential to enhance the reach of SIGDA even further.
3. SIGDA will need to continue investing in new topics and in geographically diverse locations as membership growth increases outside the US.
4. There was significant discussion on the award eligibility criteria triggered by the Turing award announcement resulting in the creation of the Diversity and Ethics Chair position. SIGDA needs to ensure that the position indeed addresses the ethics related concerns and make adjustments if needed.