ISLPED 2022: An Experience of a Hybrid Conference in the Time of COVID-19

Charles Augustine
Intel Labs
Hillsboro, OR 97124 USA

Helen Li
Duke University
Durham, NC 27708 USA

◼ **THE INTERNATIONAL SYMPOSIUM** on Low Power Electronics and Design (ISLPED) 2022 conference was held as a hybrid conference on 1-2 August 2022, when travel restrictions associated with COVID-19 were easing slowly. The conference was conducted as an in-person meeting with the entire conference also streamed live on Zoom. We had separated live streams for keynote presentations, invited talks, and two parallel tracks for the technical papers. For presenters, the option was to come in person or send a prerecorded video for the normal presentation time. Authors had to be present in person for Q&A sessions at each of the technical sessions. The attendees were given access to both presentations through a box drive and papers in advance through the Association for Computing Machinery (ACM) library. We had 94 attendees at the conference from nine countries with the majority of the participants from the United States and Asia.

Conference report

The abstract and full paper deadlines for ISLPED were March 11 and 18. The conference received 96 full paper submissions, which is 9% higher than the previous year. The majority of the submissions were from America (51%), Asia (43%), and Europe (5%). We introduced a new track with a focus on artificial intelligence & machine learning (AI&ML)

hardware and hardware and system security that constituted 33% of the submissions. The Technical Program Committee consisted of 80 experts from around the world who reviewed the submissions, with 24% members coming from industry and 76% members from academia. The review meeting took place online on the third week of May. Each track had its Zoom meeting hosted by the track chair/co-chair and held at its own convenient time. The committee accepted 23 regular papers (~24% acceptance rate) and nine poster papers (~9% acceptance rate). The acceptance rate was 2% lower for regular papers and 4% lower for overall acceptance compared to the previous year due to a higher number of submissions.

The size of the past ISLPED conference before COVID-19 ranged from 120 to 200 attendees, which qualifies it as a small/medium conference size (according to IEEE and ACM standards). However, due to the hybrid nature of the conference, we expected a lower attendance in person of approximately 65 participants. Hence, we decided to compress the program to two days instead of the regular 2.5 days to avoid lower attendance on the third day of the conference. Figure 1 gives the two-day program of ISLPED 2022.

As the size of the conference was relatively small, it allowed us to provide two technical tracks in parallel. The presenters who could not attend the conference in person were required to prepare a video to match the presentation time. We did not opt for a live video for the online presenters due to uncertainty associated with network bandwidth and other

DAY 1 - August 1, Monday	
Starting 8:00	**Registration in PHO 2nd floor**
08:00 – 08:30	**Breakfast (PHO906)**
08:30 – 09:00	**Welcome by General and Program Co-Chairs (PHO906)**
09:00 – 10:00	Keynote Talk 1: Dr Kaushik Roy, Purdue University, *Enabling Energy-efficient Learning through Co-design of Algorithms and Hardware* (PHO906)
10:00 – 10:30	**Coffee Break (PHO 2nd floor)**
10:30 – 11:45	**Session 1 Energy-efficient and robust neural networks (PHO203)** / **Session 2 Novel computing models (PHO205)**
12:00 – 13:30	Lunch (PHO906)
13:30 – 14:45	**Session 3 Efficient and intelligent memories (PHO203)** / **Session 4 Circuit design and methodology for IoT applications (PHO205)**
14:45 – 15:15	**Coffee Break (PHO 2nd floor)**
15:15 – 16:30	Special Session 1: *Efficient and Automated Design of Future Intelligent Systems* -- Speakers: Dr. Song Han and Dr. Jason Cong (PHO906)
18:00-20:30	Reception at BU Castle 225 Bay State Road Boston, MA 02215

DAY 2 - August 2, Tuesday	
Starting 8:15	**Registration in PHO 2nd floor**
8:15-9:00	**Breakfast (PHO906)**
09:00 – 10:00	Keynote Talk 2: Dr. Vijay Janapa Reddi, Harvard University, *Tiny Machine Learning: A System-level Perspective* (PHO906)
10:00 – 10:30	**Coffee Break (PHO 2nd floor)**
10:30 – 11:45	**Session 5 Advances in hardware security (PHO203)** / **Session 6 Novel physical design methodologies (PHO205)**
12:00 – 13:30	**Lunch and Poster Session (PHO906)**
13:30 – 14:45	**Session 7 Enablers for energy-efficient platforms (PHO203)** / **Session 8 System design for energy-efficiency and resiliency (PHO205)**
14:45 – 15:15	**Coffee Break (PHO 2nd floor)**
15:15 – 16:30	Special session 2: *What's Next Beyond CMOS?* -- Speakers: Dr. Massoud Pedram and Dr. Jing Li (PHO906)
16:30 – 17:00	**Awards and Closing Remarks (PHO906)**

Figure 1. Two-day program of ISLPED 2022.

glitches associated with remote presentations. The video was uploaded to a Box video link, and access was provided to both session co-chairs to provide feedback for the presentation. A 5-min Q&A part was allocated in each presentation, for the audience to interact with the speakers. The conference started at 8 A.M. and concluded at 5 P.M. U.S. Eastern Time each day. We observed that the attendance was always above 60 attendees at any moment of the day and also quite steady (in total amount per session) throughout the entire program.

We kept the tradition of ISLPED to include a poster session and a Design Contest session this year. The poster presentations were presented in person. We received three design contest submissions, and two were selected to be presented. The design contest presenters also presented in person. We live streamed both the poster session and the design contest, which happened on the second day of the conference during the lunch session.

Despite the continuing pandemic, this year's ISLPED had 94 registered regular participants. Since the conference was hybrid, we had the option to offer a very reduced rate to online participants. The registration fee for IEEE/ACM members was only $50 (early bird) and $75 (regular). The in-person participants were required to pay the regular rate of $575 (early bird) and $650 (regular) to cover the costs associated with the venue,

food, and reception. With the help of a Gold industry sponsor, Intel Corporation, which has been a long-term corporate sponsor of ISLPED, and new Gold sponsor Futurewei, the conference had a surplus at the end. In fact, this surplus guaranteed the requested budget margins by ACM and IEEE for conferences, even though the registration fees were very low this year for online attendees ($50 for the complete conference for ACM/IEEE members and $25 for students, early registration both). The attendance was also boosted by keynotes and invited presentations by experts in the field of custom circuits design, FPGA design, and machine-learning hardware design.

THIS WAS THE first time we organized a hybrid conference for ISLPED, and we had to overcome many challenges associated with having an in-person conference while making sure that online attendees had a good experience as well. Based on the feedback we received, the in-person attendees were able to enjoy the conference better by having personal interaction with speakers and other participants. Participants who attended virtually had limited experience which was expected since in-person interaction is very valuable for exchanging ideas and creating a true networking experience. The local chair had put great effort into selecting the venue and planning networking activities, having Boston as the hosting

city. In addition to serving breakfast, lunch, and coffee, we also had a networking session at the end of the first day of the conference in the Boston University castle, and we had a great time interacting with researchers from both academia and industry. We hope that the ISLPED conference will be a fully in-person meeting in 2023, and we are looking forward to it. ∎

Charles Augustine is a staff research scientist at the Circuit Research Laboratory (CRL), Intel Corporation, Hillsboro, OR 97124, USA. He has been working in the field of design technology co-optimization (DTCO) of memories, and power management circuits assisted by machine learning (ML) techniques. Augustine has a PhD in electrical and computer engineering from Purdue University, West Lafayette, IN, USA. He is a Senior Member of IEEE.

Helen (Hai) Li is a Clare Boothe Luce professor and the chair of the Electrical and Computer Engineering Department at Duke University, Durham, NC 27708, USA. Her research interests include neuromorphic computing systems, machine learning (ML) and deep neural networks, memory design and architecture, and cross-layer optimization for low power and high performance. Li has a PhD from Purdue University, West Lafayette, IN, USA. She is a Fellow of IEEE.

■ Direct questions and comments about this article to Charles Augustine, Intel Labs, Hillsboro, OR 97124 USA; charles.augustine@intel.com.