14th Annual Coordinate Science Lab Student Conference, 2019

Final Report

The 14th Annual CSL Student Conference (CSLSC) was held from 6th to 8th February 2019. The mission of CSLSC is two-fold. First, to give CSL graduate students a platform to present their work, and second, provide an opportunity to listen to and interact with outstanding faculty members, corporate representatives and invited students from other top schools. The student conference is a multidisciplinary effort and it engages students and postdocs from several departments in University of Illinois. The conference covers topics Circuits, Decision and Control, Reliable and High-Performance Computing, Signals Processing, Networks, Communications, Machine Learning Theory, and Artificial Intelligence. The student conference promotes research through an environment of learning, interaction and collaboration.

The flagship themes of the conference were Decision and Control, Machine Learning Theory, Artificial Intelligence in Action and Machine Learning in Hardware. The conference included a plenary talk, four keynote talks, four invited student talks, sixteen UIUC student talks, a poster session, a panel discussion, a robotics demonstrations session, a corporate day, a women in engineering breakfast, and a closing reception dinner and awards ceremony.

Major Achievements

Over the past few years, the conference has expanded with the inclusion of novel ideas in each edition. This year we expanded the reach and impact of the conference significantly, with 500 registrants participating in various parts of the conference. The conference saw the participation of people from 15 different institutions across the nation and 54 disciplines.

This year, we had a corporate day at CSL student conference for the second time ever. The corporate day comprised of two main events – workshops by corporate representatives and graduate student job fair. We had three corporate workshops conducted by representatives from Microsoft, IBM and 3M discussing a variety of topics from GPU based computing and AI applications to corporate research. The graduate student job fair saw the participation of 11 companies and over 150 graduate students seeking internship and career opportunities. We had over 300 resume submissions for the job fair.

The conference was diversified this year to include popular new topics in the form of dedicated sessions for Machine Learning in Hardware, Machine Learning Theory and Algorithms, Artificial Intelligence in Action, and Decision & Control.

We received 59 abstracts for 20 student presentations across the 4 sessions. Each session contained up to five talks by UIUC students and one talk by an invited student from a top school.

Through the robotics demonstration session, held for the third year running, we created the platform to display the robots from the various labs across UIUC in action. More than 150 people attended the robotics demonstration session and were able to interact with and learn about the various robotics projects around campus.

This year we had the first ever Women in Engineering breakfast which was primarily catered for women graduate students in UIUUC, to celebrate their achievements and successes, and to share their experiences so as to inspire many others.

As is the belief and goal of CSL, the conference promotes collaboration, healthy interaction and interdisciplinary research and with the years, the conference has consistently evolved toward enabling the same.

Plenary Talk

The conference began with a plenary talk on the evening of the 6th of February by Dr. Victor Bahl, Distinguished Scientist at Microsoft Artificial Intelligence and Research. The talk was on “Better Together: Intelligent Edge + Intelligent Cloud”, with an emphasis on emerging fields of research with the potential to revolutionize technology and business. The talk was very well received and drew an attendance of close to 250 students. The talk was followed by a welcome reception.

Keynote Talks

Each session of the conference included a keynote talk by prominent researchers from industry and academia. The talks were on a wide range of topics from energy efficient computing to learning NN architectures. The keynote talks drew large crowds of over 60 attendees on average.

1. **Prof. Song Han** (Professor, MIT): "*Hardware-Centric AutoML: Design Automation for Efficient Deep Learning Computing*"
2. **Prof. Shreyas Sundaram** (Professor, Purdue): "*Resilient Distributed State Estimation of Dynamical Systems*"
3. **Prof. Aleksander Madry** (Professor, MIT): "*Machine Learning and Security: The Good, the Bad, and the Hopeful*"
4. **Prof. Antonio Torralba** (Professor, MIT): "Learning to See"

Invited Student Talks

Continuing our efforts to promote an environment of collaboration across universities, we invited four students from other universities to present at the conference. The invited student talks were:

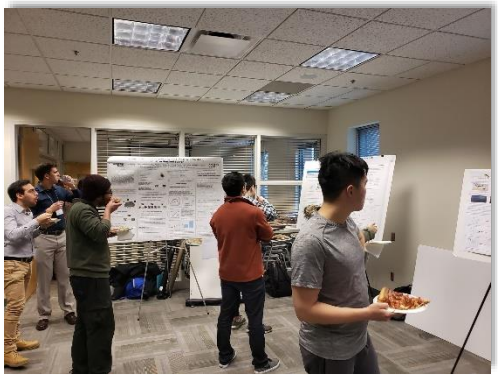
1. **Glenn Ko** (Harvard): "*FlexGibbs: Reconfigurable Parallel Gibbs Sampling Accelerator for Structured Graphs*"
2. **Omer Tanovic** (MIT): "*Causally Stable Approximation of Optimal Maps in Infinite-Dimensional Supremum Norm Constrained Least-Squares Optimization*"
3. **Jack Wang** (Rice University): "*A Max-Affine Spline Perspective of Recurrent Neural Networks*"
4. **Pulkit Agrawal** (UC Berkeley): "*Computational Sensorimotor Learning"*

UIUC Student Talks

The primary focus of the conference is to serve as a platform for the students of CSL to present and promote their research work. To this end, this year we had 20 talks distributed across the 4 sessions. The speakers were selected from a set of 59 abstract submissions after a careful and comprehensive screening process. A comprehensive list of the speakers, their abstracts, and videos of their talks can be found on our website. A best student speaker award was conferred to the best student presentation in each session.

Poster Session

The conference also included a poster session. The committee selected 12 posters for the session and the title of the posters and authors can be found at our website. Two best poster awards were conferred at the reception dinner.



Robotics Demonstration Session

For the third year running, the robotics demonstration session invited students from the campus to exhibit their robots in action at the Intelligent Robotics Laboratory (IRL) at UIUC. The event saw the participation of a total of 12 robots, the details of which can be found on our website. Two best demos were also conferred awards at the reception dinner.

Corporate Day – Workshops by Industry Representatives

Three company workshops were given by representatives from Microsoft, IBM, and 3M. The workshops were well received and attracted a large crowd of students who got the opportunity to learn about the research carried out in the industry.

Corporate Day – Job Fair

The conference also included the second edition of the graduate student job fair. The job fair aims at providing a platform for employers and graduate students to network. This year included 8 companies including IBM, Huawei, NVidia, and several national labs. Over a 100 graduate students participated, seeking career and internship opportunities.

Panel Discussion

The conference had a panel discussion following the workshop given by Microsoft. The panel discussion topic was on "*the future of Edge: Challenges and Opportunities".* Panel members included faculty from UIUC and company representatives.

Women in Engineering Breakfast

The women in engineering breakfast, introduced in this year's conference, saw around 25 student participants, in addition to four female engineering professors. The CSL Director Klara Nahrstedt headed discussions on topics such as the challenges faced by women in senior positions.

Testimonials

"CSL Student Conference 2019 gave me a platform to showcase my work to the students, researchers and faculty of University of Illinois and other prestigious institutions. The conference gave me a wonderful opportunity to meet other researchers from allied areas and discuss ideas and recent breakthroughs. The insightful panel discussion and talks broadened my horizon and helped me stay up to date on the pertinent questions and emerging ideas of our times."

Kiran Thekumparampil, CSL Student, Presenter in Machine Learning Theory session

"CSLSC was a great opportunity to listen to and learn from experts from both industry and academia. The conference also featured many student speakers and gave them a chance to share their findings and practice their presentation skills. The inaugural Women in Engineering event allowed us to share our experiences and discuss the (dis)advantages of being a female in engineering with female professors in CSL."

Leda Sari, ECE Graduate Student, UIUC

"CSLSC provides an excellent platform for sharing your work with a diverse audience to gain fresh perspectives. You would not only interact with fellow researchers but also get to network with industry practitioners which is vital for professional growth."

Pranay Thangeda, Aerospace Engineering Graduate Student, UIUC

"The CSL conference was an excellent opportunity for me to present my research findings and get feedback from fellow researchers. I enjoyed attending the many interesting talks from professors and students in machine learning and control. I got to know about the wonderful CSL facilities and research labs and I made connections with various researchers. I look forward to participating in the future and I encouraged students to do so."

Said Al-Abri, Ph.D. Candidate, Georgia Tech. Winner of Best Poster award at CSLSC

Acknowledgment

The CSL Student Conference organizing committee would like to thank IEEE CSS for their continued support and encouragement; it has played a key role in the growth of CSL Student Conference. We are grateful for the financial support extended to us by IEEE CSS through the IEEE CSS Outreach Fund. The organizing committee also gratefully acknowledges generous financial support and encouragement from the following sponsors.

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