Association for Computing Machinery

Advancing Computing as a Science & Profession

acm India

Association for Computing Machinery ACM India – Annual Report – 2018-2019

The Association for Computing Machinery (ACM), originally founded in 1947, is currently the topmost body of computer science professionals and researchers in the world. ACM India was founded to further ACM's mission of advancing computing as a science and a profession in the Indian context. The report has been collated from contributions by various ACM India people who have led the activities.

The ACM India Annual Event 2019

Abhiram Ranade, Binu A

ACM India had organized annual flagship events to discuss trends in science and technology, and to celebrate ACM's spirit and India's accomplishments in computing at Rajagiri School of Engineering and Technology on February 8 2019.

The event was organized by ACM Cochin Professional Chapter in association with the Rajagiri School of Engineering and Technology, Cochin, Kerala with the support of Dept. of Computer Science, CUSAT. CSPathshala Workshop, iSIGCSE Workshop and IRISS are co-
located ACM events with ACM India Annual Event 2019. This event was attended by ACM HQ representatives, ACM India Office Bearers, researchers and IT professionals.

The speakers included Prof. Sanjeev Arora , from Princeton university (Award : Godel Prize, Fulkerson Prize), Prof. Noam Nisan, from Hebrew University of Jerusalem (Godel Prize, Knuth Prize), Prof. Charles E. Leiserson from Massachusetts Institute of Technology (Ken Kennedy Award, Paris Kanellakis Theory and Practice Award) and Prof. Sanghamitra Bandyopadhyay, Director, Indian Statistical Institute.

Following officials from ACM HQ graced the occasion with their presence : Prof. Cherri M. Pancake is Professor of Electrical Engineering & Computer Science and Intel Faculty Fellow at Oregon State University, Prof. Vicki Hanson is the Chief Executive Officer (CEO) of the ACM (Association for Computing Machinery and Patrick G. Ryan.

The event started with the welcome notes of Prof. Poulose Jacob (President, ACM Cochin Chapter and Professor Emeritus, CUSAT). Prof. Abhiram Ranade (President, ACM India) had given the presidential address. Best Doctoral Dissertation Award and Best Student Chapter Awards were distributed during the official ceremony. ACM India report presented by Mr.Chandrashekhar Sahasrabudhe, COO, ACM India.

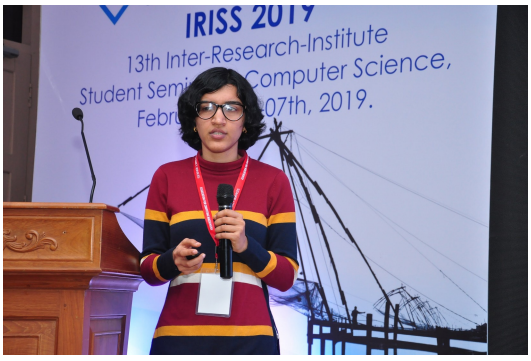
A total of 200 participants participated in IRISS 2019 and 400 participants participate ACM Annual Meet on February 8 2019. The event was sponsored by Google, TCS, icertis and persistent.

Jayant Haritsa, Neelima Gupta

IRISS provides a potent intellectual forum for Computer Science research scholars in India to showcase their (published/accepted) work to a conclave of researchers and potential employers. The event hosts oral and poster presentations by research scholars. All submissions go through a careful review by a program committee comprised of eminent experts, and selected papers are invited for oral/ poster presentations. The program committee is advised by a steering committee whose charter is to ensure a balance between innovation and continuity across successive IRISS editions.

This year, we received 69 submissions satisfying the criteria of IRISS. Of these, 16 submissions were selected for oral presentation and the others were invited for poster presentation. We are happy to report that from this shortlist, 13 researchers registered for oral presentation and 18 for poster presentation.

IRISS 2019 featured both structural and programmatic enhancements – for the first time, it was expanded into a two day event, and special emphasis was placed on networking and career advice. Specifically, an Early Career Researcher keynote address was delivered by Prof. Sayan Ranu of IIT Delhi, followed by a multitude of talks from young researchers spanning academia, industry and startups, and finishing up with a stimulating panel discussion on “Managing a Career”. The Institutional Awareness Presentations by academic and industrial researchers were enlightening, especially for students about to graduate and enter the workplace.



The IRISS 2019 keynote address was delivered by Prof. Vinod Prabhakaran (TIFR Mumbai) to a packed audience. Further, we had presentations by the ACM India Doctoral Dissertation Award recipient, Dr. Keerti Choudhary of IIT Kanpur, on her thesis titled "Compact and Efficient Fault Tolerant Structures for Directed Graphs", and by the Honorable Mention recipient, Dr. Deepesh Data of TIFR Mumbai, on his thesis titled "Communication Complexity and Characterization Results in Secure Computation”.

Finally, an evening boat-ride in the Kochi backwaters provided an excellent opportunity for the students to informally interact and engage with the several Indian and international experts present at IRISS. The event page: http://people.du.ac.in/~ngupta/IRISS2019.htm

ACM India Doctoral Dissertation Award

Supratik Chakraborty, Hemangee K. Kapoor

The ACM India Doctoral Dissertation Award, established in 2011, recognizes the best doctoral dissertation from a degree-awarding institution based in India for each academic year, running from August 1 of one year to July 31 of the following year. The award is accompanied by a prize of INR 200,000, and the winning dissertation is published in the ACM Digital Library. This award is additionally supported by Tata Consultancy Services Limited (TCS), the founding sponsor. The call for nominations for the 2019 award was sent to more than 100 Indian institutions awarding Ph.D. degrees in Computer Science and related disciplines and was also announced on ACM India's webpage in June 2018.

A total of 25 nominations were received from academic institutions from across India. A jury panel consisting of 11 distinguished computer scientists from around the world was constituted with Prof. Aravind Srinivasan (University of Maryland at College Park) as the Chairperson to review and evaluate the nominations.The jury was very impressed with the quality of the nominated dissertations. The jury included professors from universities in US and Europe. They went through several rounds of intense deliberations. Initially, based on the reviews potential finalists were decided. Subsequently the winners were arrived at by going through the dissertations and analysing the reviews. Based on further discussions, they identified the winner and honorable mention.The jury selected Dr. Keerti Choudhary's dissertation titled "Compact and Efficient Fault Tolerant Structures for Directed Graphs" for the ACM India Doctoral Dissertation Award, 2019. Dr. Keerti completed her Ph.D. from Indian Institute of Technology Kanpur under the guidance of Prof. Surender Baswana. Jury also decided to give one special mention award this year. Dr. Deepesh Data's dissertation titled "Communication Complexity and Characterization Results in Secure Computation", was selected for the Honorable Mention. Dr. Deepesh completed his

PhD from Tata Institute of Fundamental Research, Mumbai under the guidance of Prof. Vinod Prabhakaran. The ACM India Doctoral Dissertation Award for 2019 was presented during the ACM India Annual Event in February 2019 at, Rajagiri School of Engineering and Technology, Kochi, Kerala. Tata Consultancy Services (TCS) generously sponsored the awards. Both the award winners were present in person to receive the award. A committee of three members (Abhiram Ranade, Hemangee Kapoor and Supratik Chakraborty) coordinated the efforts.

MSR-ACM India Academic Research Summit

Hemant Pande

The Academic Research Summit series is a forum to foster meaningful discussion and discussion among the Indian Computer Science research community and enable collaborations to advance the state of the art and raise the bar on research efforts.

The fourth edition of the Academic Research Summit was organised by Microsoft Research (MSR) in partnership with the Association for Computing Machinery (ACM) India and the Robert Bosch Centre for Data Science and AI at IIT Madras. The summit was held on the 24th and 25th of January 2019 at the ICSR Auditorium in IIT Madras.

AI researchers are striving to create intelligent machines that complement human reasoning and enrich human experiences and capabilities. At the core is the ability to harness the explosion of digital data and computational power with advanced algorithms that extend the ability for machines to learn, reason, sense, and understand—enabling collaborative and natural interactions between machines and humans. The Academic Research Summit 2019 was focused on the theme of Data Science and AI.

The agenda of the summit included keynotes, plenary talks and other tracks from distinguished researchers from India and across the world.

Day 1 (24th January 2019):

The plenary talk by Raghu Ramakrishnan (CTO for Data & Technical Fellow of Microsoft) covered the current technology landscape, the opportunities to bring ML to bear on a range of data-driven tasks, and the challenges of responsible data governance when doing so on high-value and sensitive data.

Sriram Rajamani (Managing Director, Microsoft Research India) in his keynote compared program synthesis with supervised machine learning and presented the recent efforts in combining program synthesis and machine learning techniques to solve the problem of synthesizing extractors from heterogeneous data. He explored several opportunities at the intersection of program synthesis (and more broadly the PL community) and machine learning, such as pruning and ranking programs during synthesis, neural program synthesis and automatic differentiation.

A track focused on Systems Support for AI was chaired by Chandu Thekkath, Distinguished Engineer at Microsoft. The session was followed by a panel Discussion on “Challenges &

Opportunities in AI – some perspectives", moderated by P J Narayanan , Director IIIT Hyderabad.

Day 2 (25th January 2019):

In her plenary talk "Redesigning Neural Architectures for Sequence to Sequence Learning", Sunita Sarawagi (IIT Bombay) presented a critique of various aspect of the Encoder-Decoder model with soft-attention. She also presented a new Posterior Attention Network for a more transparent joint attention, and summarized recent research efforts towards parallel decoding of long sequences.

Varun Aggarwal (Co-Founder, Aspiring Minds) in his industry talk titled "Using AI in the industry, sprucing up academia" discussed how they have used AI over the last 7 years to build tools for grading skills and providing feedback, along with examples of grading programs, video interviews and simulating chats. He brought out opportunities, challenges and pitfalls of using AI in the industry.

As machine learning systems move into societally critical domains such as healthcare, education, finance and criminal justice, questions on their impact gain fundamental importance. The track focused on "AI for Societal Impact" was moderated by Amit Sharma, researcher at MSRI. The final session on "Technologies for India" was hosted by Hemant Pande (Executive Director, ACM India) which brought out efforts to solve India-scale challenges through application of technologies. Representatives of the start-up ecosystem presented the challenges involved and put forth potential collaboration opportunities with academia.

ACM India Education Committee and *i*SIGCSE

Venkatesh R.

Two of the main activities organised by the Education Committee and *i*SIGCSE are CSPathshala and COMPUTE, which have been reported separately. COMPUTE will now be an iSIGCSE meeting and provide a platform for education researchers to meet and discuss various issues in CS education. In line with this new focus COMPUTE '18 had a keynote talk by Dr. Anil Sahasrabuddhe, head of AICTE. This resulted in a meeting between ACM representatives and Prof. Anupam Basu to discuss collaboration between ACM and AICTE to define the introduction to programming course curriculum. COMPUTE '19 will include a tutorial on CS Education research to encourage faculty to take up research activities in education.

CSPathshala continues to grow and will be organizing its first conference, CTiS (Computational Thinking in Schools), which will provide a platform for school teachers to interact and exchange ideas on effective teaching content and techniques. Cambridge University Press will be publishing books and a programming environment based on CSPathshala content.

Three workshops on teaching introduction to programming and assessment were conducted as part of our faculty development initiative.

Vipul Shah

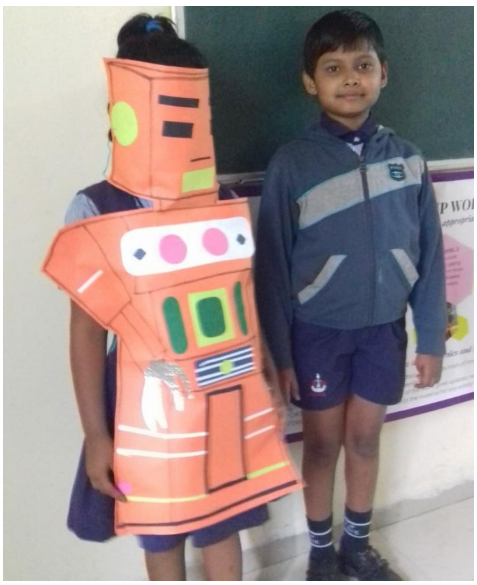
Computing is ubiquitous and people from every walk of life will need to be familiar with computing in some form or the other. This will give rise to a huge demand for computing skills leading to a talent shortage. To address the skills demand created by the industrial revolution, the Sciences and Mathematics were included in the school curriculum in the early 19th century. Now as we participate in the digital revolution, we need to train our children on skills for the digital age. We need to teach our children to be socially responsible citizens and train them to be creators and inventors of technology. It is therefore imperative to teach computing, which promotes problem solving, computational thinking and critical reasoning skills, in schools.

Guessing Birthday, ZP school, Takalkarwadi, Khed

ACM India started a national education initiative, **CSpathshala** (www.cspathshala.org) in **2016.** The initiative continues to break new ground. Starting with 15 pilot schools in 2016-17, over 300,000 students from 750 schools in 11 states are piloting the CSpathshala curriculum. 2/3rd of these schools are government schools located in rural and tribal areas. 77 awareness workshops and training programs have been conducted to date reaching 4258 educators from 2093 institutes.

Tamil Nadu SCERT has included a subset of the curriculum into its revised Mathematics curriculum and is taught in 10,000+ schools across the state. Cambridge university press has published books as derivative of CSpathshala teaching aids which will increase the reach manifold. The number of volunteers continues to grow with more and more people stepping forward to contribute to the initiative. Partnerships with Rotary Club of Pimpri, Teachers of India and CodeChef is helping us bring more organizations into the initiative.

CSpathshala organized the first Bebras computational thinking challenge in India from November 19-30, 2018. Bebras challenge is organized in over 50 countries. The challenge comprises short problems that are created to get students excited on computational thinking. Solving these problems require logical thinking with no prior knowledge of computing. Indian Bebras was offered in 4 languages and saw participation from 1,37,000 students. It was heartening to see students from tribal schools in Andhra Pradesh bag national ranks!



Following instructions, Stepping Stone school, Pune

The 1st CTiS (Computational Thinking in Schools) conference will be organized in April 2019. It will provide a platform for teachers to share experiences and resources as well as interact with computer scientist. The response to call for abstract was overwhelming. 55 abstracts were received from 11 states.

CC2020 Steering Committee Report

Abhijat Vichare

As usual, two face to face meetings, and a few over the internet, of the steering committee of the CC2020 project were held during this reporting year. At the one in Lima, Peru in October 2018, a first cut of comprehensive knowledge areas in computing was developed by a union of all the knowledge areas of each curriculum report based on the CC2005. I contributed to a clear articulation of the expectations arising from the proposed move to competencies. The tools group needed help on ensuring that many parameters of curriculum development be computable; particularly those related to “dispositions”. The steering committee also set itself a target to develop a draft report for internal steering committee circulation by December 2018. I took on the responsibility of writing the chapter on “Landscape of Computing” in the report. The first draft of the report was ready by April 2019, before the second meeting at Chengdu, China in May 2019.

By the second face to face meeting in China, the tools group had made significant progress. The tools group has used the currently available curricula to identify six key knowledge areas in terms of their contribution - according to the traditional knowledge area-knowledge unit-learning outcomes approach. Next, they have tried mining techniques over curricula mined from the Internet to figure out the competencies. While this is ongoing and may change significantly, the current results are impressive in the sense that they indicate a good potential for success. Also, sample use cases were worked out to show how the tool will work. By the Goa meet this group hopes to do a reasonable demonstration of the tool.

Second major milestone was the completion of "Draft 0" of the report. The overall content of the report is now fairly visible. We need to contribute a couple of paragraphs of information about bachelor level degree programs in India to the report. The CC2020 group has strongly desired to build upon and improvise the program visualizations of the CC2005 effort. This has so far not been realized. I have been working on this problem, called as the "computing landscape" issue. I presented the developments of this work, and have been encouraged to continue. This actually is a research problem too, that I am expected to work on and publish in some SIGCSE avenue, tentatively by March 2020.

Finally, the CC2020 group had two presentations at the CompEd 19, and TURC -- the Turing Celebrations that were held in parallel. The CompEd 19 presentation was an official panel that brought out the global perspectives on CS education, including India. The CompEd session was well attended compared to the TURC session, and was highly interactive. The audience was interested in the education approaches across the world; from India, China, Latin America, Ireland, New Zealand and the United States. I presented our approaches of 3 and 4 year degree programs with some data from the UGC and the AICTE web sites.

The CC2020 group eagerly looks forward to the Goa meet.

ACM-India Summer Schools

Venkatesh Raman

ACM-India started summer schools in 2017 to inculcate to students, problem solving as a skill, and to introduce them to recent developments in computer science. These schools, that run from 2 to 3 weeks, are held in various geographical areas of the country, and cover classical and modern topics in computer science. These schools are targeted towards senior undergraduate and graduate students, and one of the aims is also to expose students to leading researchers in the country. With some help from host organization, ACM-India covers most of the costs of the schools.

After a highly successful set of four summer schools in the summer of 2017, we had five summer schools as below in 2018.

1. Fundamentals of Cryptology Research at Indian Statistical Institute, Kolkata during June 4-22, 2018.
2. School on Data Sciences at University of Goa, Goa during June 4-16, 2018.
3. School on Information Security and Forensic Sciences at PES University, Bengaluru during June 11-29, 2018, targeted at women.
4. School on Programming Languages: Principles and Practice from June 4 to 23, 2018 at Pimpri-Chinchwad College of Engineering, Pune.
5. School on Graph theory and Graph Algorithms at PSG College of Technology, Coimbatore from May 21st to June 8th, 2018.

These schools have a strong emphasis on tutorial sessions, and they continue to be highly popular among undergraduate students. Several students, in their feedback, have opined that the schools gave them a focus on the subject and helped them decide about going for higher studies in the area. These schools have also provided a much needed forum for leading experts in the country to interact with students across the country, mostly from Tier II institutions.

ACM-W India

Heena Timani

ACM India Summer School for Women, 11-29 June 2018

ACM India Summer School on Information Security and Forensics (for Women) took place between June 11 and June 29, 2018 at PES University, Bengaluru. The main topics covered in this course included Cryptography & Number Theory, Mutual Trust Mechanisms, Software and Application Security, Network & Internet Security, Mathematical Models of Computer Security, Privacy, Digital Forensics Fundamentals. There was emphasis on theoretical aspects of the topics as well as the participants were given hand-on knowledge by the experts. There was also Turing Talk Series (on Security).

ACM India Celebration of Women in Computing (AICWiC 2018),28-29 June 2018

AICWiC 2018 was organised by the Department of Computer Science and Engineering, PES University and the Centre for Information Security, Forensics and Cyber Resilience, PES College, Bengaluru. The first keynote talk was by, Ms Swapnil Shrivastava, on "Privacy Preserving Techniques for Big Data". Ms. Srivastava is working as Principal Technical Officer in Big Data Analytics group at C-DAC, Bangalore. Ms. Srivastava talked in detail about the inherent security risks of different systems, particularly 'Adhaar'.The keynote lecture by Dr. MB Rajani discussed in detail about the application of computing techniques to archeological data and its' analysis. The panel discussion was immensely interesting, as each speaker shared her view in the context of 'Programming in Indian Context with the focus on women'. The panel was moderated by Prof. V Kumar. The prizes for best poster and winner of Lady Ada programming Contest were given away by Chandrashekhar Sahashrabudhe . Finally, the chairperson of ACM-W, India, Dr. A Dixit thanked all for maikng this event a successful.

ACM India Grad Cohort, 6-7 July 2018

CRA-W, an international computing body, has been organizing the Grad Cohort workshop since 2004 in the US for women graduate students in computing. Over the last 15 years, the workshop has helped many women students through their graduate years and beyond. ACM-W India decided to adapt the model of this workshop to the Indian setting. ACM India Grad Cohort 2018.

The first pan-India workshop for women graduate students in computing was organised this year. The event took place on July 6, 2018 and July 7, 2018 in CSE department at IIT Bombay campus. This workshop was also made a part of the Diamond Jubilee Celebration of IIT Bombay. The main goal of this workshop was to reach out to Indian women graduate students in the field of computing.

The event was attended by 75 participants who came from approximately 20 different colleges and universities across India. Among these around 45 students were pursuing their PhD in areas of computing, while the rest were students pursuing their Masters degree.We were fortunate to have 15 eminent Indian women speakers at the event from various academic institutes and from the industry. The list of speakers along with their affiliations

Shweta Agrawal (IITM, Chennai), Varsha Apte (IITB, Mumbai), Kalika Bali (Microsoft Research India, Bengaluru), Aiswarya Cyriac (CMI, Chennai), Meenakshi D'Souza (IIITB, Bengaluru), Mythreyee Ganapathy (Microsoft, Hyderabad), Padmaja Joshi (CDAC,Mumbai), Preethi Jyothi (IITB, Mumbai), Hemangee Kapoor (IITG Guwahati), Shruti Kunde (TCS, Mumbai), Neeldhara Misra (IITGn, Gandhinagar), Rijurekha Sen (IITD, Delhi), Rekha Singhal (TCS, Mumbai), Nidhi Tiwari (Infosys, Bengaluru), and Mythili Vutukuru (IITB, Mumbai). Each talk was followed by enthusiastic participation of the attendees and engaging question and answer session. We believe that such an event is very useful and has many benefits to women graduate students in India.

3rd National Level ACM Women Hackathon 2018,7-8 October, 2018

To celebrate and promote women in computing, the ACM Ahmedabad chapter along with the ACM women chapter of Ahmedabad University, Oracle Academy and Tata Consultancy Services, organized 3rd National level ACM Women Hackathon 2018 on 7th and 8th October, 2018, under the theme "Sustainable Smart Society". The grand finale which was held at Ahmedabad University, Ahmedabad, on 7th October, 2018.

The event received tremendous response through registration of 300 plus teams of computer aspirant's from all over India, ready for exhibiting their talents and innovative thinking capabilities. A team of highly professional industrial persons, ACM members and Oracle Academy members evaluated and selected 25 best teams. The top 25 teams were interviewed through Skype on 8th September, 2018, for innovativeness of the idea, its implementation and its application for creating Sustainable Smart Society. They all were strong contestants and selecting top 10 teams for the grand finale was quite tough and brainstorming for the evaluating team members.

All the top 10 finalist teams accompanied with their respective mentors were called for an on-site final round with the theme like Healthcare and Security. These teams were given 24 hours to successfully run their application and showcase their idea to the judging panel. The penal of judges of Hackathon included Ms. Gunjan Lal, a developer Operating engineer at Adobe and a Council member ACM-W India, Mr. Amish Choudhary, the vice President at MSCI, and Mrs. Maria Choudhary from PMTS Oracle. The Hackathon Winners Sponsored by Oracle Academy, India and announced by Ms. Suji Goplan Oracle Academy. Prof.Heena Timani, Ahmedabad University thanked everyone for making Hackathon a grand success.

The Grace Hopper Celebration of India-2018, Bangalore India, November14-16, 2018

The Grace Hopper Celebration of women in computing, India GHCI2018 co-sponsored by ACM is one of the leading event in Indian technology. In this event women technologists gathered at Bangalore to participate, learn and contribute to celebration that represents excellence and diversity. A half an hour slot on 16th December was allotted to ACM-W India Speaker to address GHCI 2018 Scholars. There were three speakers

who shared their successful technology related life story with the participants. There were total 120 GHCI scholar participants. Mrs.Ruchika Mann, Director on Board of American Express and working with American Express from past 18 years did not have any ambition or goal to become so successful. Dr. Kalika Bali has been researcher at Microsoft for Natural Language Processing and speech synthesis and recognition. Dr. Meenakshi D'Souza, IIIT-Bangalore, discussed that couple of years of post-doctoral research, a computing researcher can take up career options in industry or academia. In this interactive session, the speakers discussed about research career options including entry into industry and academic jobs, expectations from these jobs and challenges to stay active in research, based on their experience.

A small meet up of ACM Sponsored Scholars was organized on 16th December during GHCI2018. ACM-W Council member Prof. Heena Timani, Ms. Gungjan Lal and ACM-W chapter representatives shared their experiences, learning and various activities they are doing on their campus under ACM Chapter. The ACM sponsored 40 participants which included students and four faculty members. There were representatives from about 15 ACM student chapters from India. All the ACM Chapter participants got opportunities to network with other ACM student chapters representatives.

Conference Sponsorships

Manish Gupta

Below were the conferences held in India with ACM Approval:

11th Indian Conference on Computer Vision, Graphics and Image Processing

Advances in Robotics 2019

Third International Conference on Advanced Informatics for Computing Research

International Conference on Distributed Computing and Networking

The Tenth International Conference on Information and Communication Technologies and Development

Forum for Information Retrieval Evaluation

6th ACM IKDD CoDS and 24th COMAD

12th Innovations in Software Engineering Conference (formerly known as India Software Engineering Conference)

India HCI 2018

FIRE '18: Forum for Information Retrieval Evaluation
ICDCN '19: International Conference on Distributed Computing and Networking
ICTDX '19: Information Communication Technology for Development
VLSI '19: 32nd International Conference on VLSI Design & 19th International Conference on Embedded Systems, 2019
COMSNETS '19: 11th International Conference on COMmunication Systems & NETworkS

ACM COMPUTE 2018

Rajnish Sharma

October 15, 2018 – COMPUTE 2018, An International Symposium was organized by ACM India from October 12 to 14, 2018, in collaboration with Chitkara University, Punjab.

The three-day conference was inaugurated by Dr. Anil. D. Sahasrabudhe – Chairman, All India Council for Technical Education (AICTE), along with Dr. Ashok Chitkara – Chancellor, Chitkara University and Dr. Madhu Chitkara – Vice-Chancellor, Chitkara University. The conference was attended by over 350 delegates comprising of ACM India Council Members, ACM India chapter representatives, and students & faculty of many institutions.

During the conference, Dr. Anil D. Sahasrabudhe, Chairman, All India Council for Technical Education (AICTE), talked about how Engineering Education can be improved in India and the specific measures AICTE is taking in that direction. He appreciated Chitkara University for establishing a well-rounded innovation ecosystem at the University. Keynote addresses were delivered by the President of ACM India Dr. Abhiram Ranade, Professor (CSE), IIT Bombay, and Dr. Pankaj Jalote – Professor (CSE), IIIT Delhi.

COMPUTE 2018 focused on two theme areas. The first part focused on improving the quality of Computer Science Engineering education (including curriculum, pedagogy and assessment) in Indian undergraduate programs. It featured talks by experts from premier institutions on topics like Computer Science Curriculum Design including Curriculum Pedagogy and Assessments. The speakers included Dr. Alison Clear from Eastern Institute of Technology, New Zealand, who talked about Computing Curriculum – CC2020 a global

vision on Computing led by ACM and IEEE; Dr. Manpreet Singh Manna (former Director, AICTE) who talked about SWAYAM Program – a self-learning platform from AICTE; Dr. Madhavan Mukund (CMI, Chennai); Mr. R. Venkatesh (TCS, Research); Mr. N S Kumar (PES University, Bangalore), also shared their views. Hands-on sessions and tutorials to familiarize faculty with emerging educational tools and resources (including 3-D printing and Augmented Reality), were also conducted.

The second part of the conference was directed toward students, research scholars, academicians who wish to present solutions to solve India specific problems, with a poster presentation competition organized on the theme, COMPUTING FOR BETTER BHARAT. Around 23 students' teams from engineering institutions all over the country participated to show how computation can be used to solve India specific problems. The team from UIET, Panjab University, bagged the first prize worth Rs. 25000 for their poster titled, 'Automatic Triggering of Acoustic Sensing by Human Activity Recognition using Accelerometer'. Federal Institute of Science and Technology, Kerala, won the second prize worth Rs 15,000 for their poster titled, 'SignDict – Mobile based ISL learning tool'. Third prize worth Rs 10,000 was awarded for poster titled, 'Classification of Pluripotent Genes using Machine Learning Techniques' submitted jointly by IIIT Bhubaneswar and NIT Rourkela.

COMPUTE 2018 also featured two tutorials one each for students and faculty. Tutorial on Blockchain Technology was organized by Mr. Amit Vats and Mr. Vivek Rastogi (Infosys, Chandigarh) for the students, and a tutorial on how to teach IoT system design was conducted for faculty by Mr. Amit Kumar Gupta (GT Silicon Pvt. Ltd). A panel discussion session was also organized during on "How programming is evolving as a profession and how it should be taught".

Speaking at COMPUTE 2018, Dr. Madhu Chitkara, Vice-Chancellor of Chitkara University, said, "We are excited to have Dr. Anil. D. Sahasrabudhe (Chairman – AICTE) at our campus and are thankful for his kind appreciation towards innovation at Chitkara University. Computation can have many positive influences on modern life, but these benefits are unevenly distributed, particularly in our country. It was nice to see the subject being discussed at length between professors, students and IT professionals from the industry, to address the problem areas in our country. The International Symposium, Compute 2018, has set the right tone for a 'Better Bharat'."

CoDS-COMAD 2019

Lipika Dey

Website: https://cods-comad.in/2019/

The Second ACM India Joint International Conference on Data Science and Management of Data (CoDS-COMAD) 2019 (6th ACM IKDD CoDS and 24th COMAD), was held in Swissotel, Kolkata, India from January 3 to 5, 2019.

This edition of the conference had about 400 registered attendees, which is the largest for CoDS or COMAD so far. In addition to the regular industry sponsors American Express, TCS, Microsoft, Adobe, IBM, Google, Rakuten, Intel and Hike, the conference banquet was

sponsored by Flipkart, the Best Paper Awards by Amazon, and the Student Travel Grants by Cisco and Netapp.

The invited section of technical program of the conference featured 4 Keynote Talks, 6 Invited Talks, 4 Tutorials, and 2 Panel Discussions. The contributed and peer-reviewed section included presentations of x Research Papers, y Demo Papers, 27 Young Researcher Papers along with a Poster Session.

The keynote talks this year are by Raymond Mooney (Professor, Dept.of Computer Science and Director of the AI Laboratory, University of Texas at Austin), Subbarao Kambhampati (Professor, Dept. of Computer Science & Engg., Arizona State University), Milind Tambe (Professor, Dept. of Computer Science & Dept. of Industrial and Systems Engg., University of Southern California), and Krishna Gummadi (Faculty, Head, Networked Systems Research Group, Max Planck Institute for Software Systems). More details can be found here: https://cods-comad.in/2019/keynote.html

Continuing the tradition of hosting invited talks, this year's conference features ten of them by top researchers from the academia and industry, both from India and abroad.

The conference included 4 technical Tutorials on cutting edge topics given by experts in the respective areas from academia and industry. More details can be found here: https://cods-comad.in/2019/tutorials.html

There were two Panel Discussions. The Industry Panel discussion was on "Challenges in developing and deploying AI/ML solutions at scale in industry". The topic of the primary Panel Discussion was "What should be India's AI strategy?" and the panelists included industry, academic as well as government experts on the topic. For more details, see: https://cods-comad.in/2019/panel.html

This edition of the conference introduced a "top-tier conference paper" session, in which a select few authors of papers from the very best conferences in the field are being invited to repeat their presentations with the hope of inspiring the CoDS-COMAD participants.

The main research track of CoDS-COMAD 2019 received about 120 submissions of which 24 papers were selected for oral and poster presentations. The Industry Track had 22 submissions out of which 8 were accepted for presentation, and the Demo Track had 29 submissions out of which 12 were accepted. The submissions were reviewed by a large and diverse Program Committee from both academia and industry across the world (see: for research, and for demos).

The Young Researchers Symposium was organized to showcase top-quality dissertation work by students and Postdoctoral Fellows. The symposium provided opportunity for young researchers to have fruitful peer-to-peer discussions and to receive feedback from leading senior researchers about their current research work. There were 63 submissions and the program included presentations by 27 accepted submissions. More details can be found here. The submissions were evaluated by a Program Committee.

The top Technical, Demo and YRS papers, selected by a panel of judges, were given Best Paper Awards. The award included a cash award as well as a certificate. Details can be found here.

To make it possible for students from across the country to attend, the conference provided Travel Grants to about x Students, which is also the largest in the history of the conference.

Among the highlights of the conference was the Conference Banquet, where the awards were given out, and which featured a musical performance by a live band.

This year's joint conference has significantly improved upon the record of CoDS-COMAD '18. All of important statistics are significantly higher than those from last year, which testifies to the growing popularity of the conference as a pre-eminent forum in the country for top researchers from the academia and industry to showcase their work and exchange ideas.

iKDD Report

Shourya Roy

IKDD, the professional chapter of SIGKDD in India organized a "Data Science in India" event collocated with the ACM SIGKDD in London on 21st August 2018 (website). This event has been co-organized with SIGKDD every year since 2015 with the goal to showcase the current state and the growth of KDD and Data Science fields in India. At the event eight prominent researchers spoke about their latest research either from India or in collaboration with an Indian institution. The event attracted KDD researchers from various parts of the world and from academia/industrial labs/startups and companies and offered a great networking opportunity.

In the CoDS-COMAD 2019 conference, iKDD launched a Newsletter to promote awareness about the organization and its activities. The Newsletter contained a summary of event IKDD hosted in 2018 (by Prof. B. Ravindran and Dr. Shourya Roy). Dr. Gautam Shroff and Prof. Ravindran narrated the history of iKDD to bring forward how it all started from a mere conversation in 2011. The Newsletter contained an interesting pieces such as a guest blog by Prof. Chiranjib Bhattacharya and "Diaries of a Young Indian Research Scholar" by Dr. Ankit Anand. A few interesting keynote talks from NeurIPS 2018, indexed by Videoken, were also featured in the Newsletter.

Innovations in Software Engineering onference 2019 (ISEC'19)

Ravindra Naik

Innovations in Software Engineering Conference is the annual conference of iSOFT, the India chapter of ACM SIGSOFT (http://isoft.acm.org) under the umbrella of ACM India. ISEC brings together researchers, practitioners, and educators from India and around the world to present and discuss the most recent innovations, trends, visions, experiences, and challenges in software engineering.

The 12th Innovations in Software Engineering Conference (ISEC'19) was held in Pune, India at College of Engineering Pune (COEP) from February 14-16, 2019. It was attended by a huge number of 220 delegates, spread across students (65), industry researchers (86), and academic faculty (69), including multitude of faculty cum students from COEP. The website is hosted at https://isoft.acm.org/isec2019/.

In this 12th edition of ISEC, we merged the main Research and Industry tracks. The highlight of ISEC 2019 was the re-introduction of PhD symposium track, and the introduction of a new track in a full-fledged manner for Start-ups, primarily since Pune is home to a large number of Start-ups.

For the main Research track this year, we extended the call for papers to include Software Engineering methodology for developing Artificial Intelligence (AI) / Machine Learning (ML) based systems and use of data-driven AI/ML in building software. We received a total of 71 paper submissions with authors from 14 different countries including India. All papers were reviewed by at least three members of the eminent program committee with reviewers from 12 different countries. As a result, 15 regular research papers were accepted, for an acceptance rate of 34%, and 9 short papers were accepted for an acceptance rate of 33.3%. All papers were presented in the main conference and the ISEC 2019 proceedings are published in ACM Digital Library.

ISEC 2019 re-started the PhD Symposium track, which received 14 submissions. Another independent program committee from top academic institutes in India reviewed each of these submissions before accepting 3 papers for publication and 3 papers as posters. Each poster paper was also given a small time slot for making a presentation pitch. The PhD posters and presentations received a very good response from the delegates.

ISEC 2019 formally initiated the Start-ups track, which was started in a small way last year. Out of 14 submissions received, the track chairs reviewed and shortlisted 11, and finally selected 6 Start-ups for presentations and demonstrations. For demonstrations, each startup was given a stall where they also put up their posters. This track was very well received by students and industry researchers alike.

ISEC 2019 was inaugurated by Dr. B. B. Ahuja, Director of COEP, who expressed his excitement of hosting a prestigious conference at the cusp of Information Technology in general and Software Engineering in particular, undergoing rigorous changes, triggered by Data Analytics and Artificial Intelligence.

ISEC offered an exciting program that included paper presentations combined with a rich collection of invited speakers. Our keynote this year was given by Professor Yvonne Dittrich, Professor of Computer Science, IT University of Copenhagen, Denmark, who spoke on the topic "Use-Oriented Design and Software Ecosystems". We had a very interesting panel discussion on the topic "SE Practice and Research in the era of AI/ML applications", which was moderated by Dr. Atul Kumar of IBM Research, and well contributed by the panelists: Academician Dr. Tony Clarke (Aston University), Industry representative DiptiKalyan Saha (IBM Research), and a Practitioner Consultant Sameer Mahajan (GS Lab).

Following tradition established over the last 11 years, ISEC 2019 invited two speakers to present talks based on their recent ACM Distinguished paper awards in top-tier Software

Engineering conferences. One talk was on the topic "The Tensor Algebra Compiler" (OOPSLA 2017) by Fredrik Kjolstad of Massachusetts Institute of Technology (MIT), Cambridge, MA, USA, and the second talk was on the topic "Large-Scale Analysis of Framework-Specific Exceptions in Android Apps" (ICSE 2018) by Ting Su of Nanyang Technological University, Singapore.

ISEC 2019 continued the “Test of time” paper award started in 2018. ISEC Test of time paper award is given to a paper that proposed methods, techniques, framework, tools, etc., that were used by many in practice and reported their results at academic and/or industry forums. Papers from three ISEC conferences that were held 9-11 years before the current ISEC conference are considered for this award. The ISEC Test of Time Award 2019 was given to Amit Raj, T. V. Prabhakar, and Stan Hendryx, for their paper “Transformation of SBVR business design to UML models” which appeared in ISEC 2008. Prof. T. V. Prabhakar (IIT, Kanpur) presented interesting tit-bits and references to industry works that are carrying this work forward.

Motivated by the emerging research areas of software engineering for AI/ML applications, Senthil K Mani, group manager of ‘SE for AI’ research group at IBM Research India gave a talk on “Software Engineering for AI/ML”.

Also, ISEC 2019 hosted four workshops, co-located with the conference, on the following topics:

- Emerging Software Engineering Education (Half-day)
- Towards Adaptive Enterprise (Full day)
- Application of Artificial Intelligence in Software Quality Assurance (Half day)
- Software Engineering Aspects of Cyber-Physical Systems (Full day)

The workshops were organized by various industry and academic partners. They had primarily invited speakers from India and overseas for giving talks and discussions.

Another co-located event which was very well-received and attended at ISEC 2019 was the Tutorials and Technical Briefings. Two Tutorials were on topics:

- Dynamic Condition Graph (DCR) Monocle
- Evidence Based Software Engineering

Three Technical Briefings were as follows:

- BuRRiTo Business Rule Rationalization Toolkit
- Android Malware Prediction using Source Code Metrics and Machine Learning Techniques
- Sankie: AI Assisted Dev-ops

We organized a reception on Day 1 of the Conference, and a Banquet together with a cultural program on Day 2 of the Conference.

ISEC 2019 received very good support and sponsorships from Tata Consultancy Services, Icertis, IBM, and Microsoft. College of Engineering Pune not only hosted the Conference, but also provided sponsorship as well as extensive help in organizing the conference. Our sincere thanX to iSoft and ACM India for their help, and ACM for the publications. With the generous sponsorships, ISEC 2019 provided free registration to academic students (subsidized registration fees were reimbursed after the conference), subsidized registration to faculty, travel grants and free-hostel facility to deserving outstation students, and registration fee waiver to student volunteers.

Without the support of the entire organizing team (Chairs of all events and Program Committee members), this conference would not have been possible. My sincere appreciation of their efforts.

ISEC 2019 hopes to carry forward the enthusiasm and the energy of extremely good attendance to ISEC 2020 next year in Jabalpur.

Chapter Summit

Chapter Summit was held during Compute 2018 at Chitkara University, Chandigarh. 23 chapters participated in the summit. Award winning chapters presented the report while other chapters did poster presentation.

DSP/ESP Schemes

Under Distinguished Speaker Program, 38 talks were organized at different Chapters by 29 speakers. Under Eminent Speaker Program, 16 talks were organized at different Chapters.

Membership Status

Membership	**Mar-18**	**Mar-19**
Professional	4,474	5,936
Students	6,401	5,214

Total	10,875	11,150
No. of Professional Chapters	13	10
No. of Student Chapters	145	173
No. of SIG Chapters	6	10
No. of ACM-W chapters	28	39

*** End ***