Association for
Computing Machinery

Advancing Computing as a Science & Profession

Association for Computing Machinery

ACM India

Annual Report 2019-2020

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 2020

Neeldhara Misra / Jayant Haritsa

ACM India has been organizing annual flagship events to discuss trends in science and technology, and to celebrate ACM's spirit and India's accomplishments in computing. This event is attended by ACM Turing Award winners, ACM office-bearers, professionals, researchers and students in computer science and allied areas. The 2020 edition of the ACM India Annual Event was held on **February 15th** at IIT Gandhinagar.

The event, which was expertly compered by **Prof. Hemangee Kapoor** (IIT Guwahati), kicked off with a welcome speech by **Prof. Harish PM** (Dean, Students Affairs and Professor of Mechanical Engineering, IITGN), providing background about IIT Gandhinagar. Following up, **Dr. Heena Timani** (ACM-W India Chair, and past chair of the ACM Ahmedabad local chapter) made the opening remarks.

The technical program began with a presentation of the ACM report by **Prof. Cherri M Pancake** (Professor-Emeritus Oregon State University, Director-NASCE, and President-ACM). She introduced the participants to various activities of ACM aimed at advancing computing as a science and as a profession. Encouraging the attendees to volunteer, she highlighted that participating in ACM activities helps to learn, build relationships, gain experiences, and grow as individuals.

Prof. Abhiram Ranade (President, ACM-India and Professor, IIT Bombay), reported on the ACM-India Council's latest initiatives in CSE education, research, continuing education for professionals, networking, gender issues, pedagogy and assessment, influence policy, and industry-academia alliances.

He also talked about the CSpathshala initiative, a Computational Thinking Curriculum for children of class-grade I to class-grade VIII, which propagates the essentials of computer science research.


The main event comprised four public talks aimed at a broad audience:

1. "Self-Supervised Learning: The Next Step in AI", by **Prof. Yann Lecun** (2018 ACM Turing Award Laureate, New York University and Chief AI Scientist at Facebook)

2. "Algorithms Beyond the Worst Case" by **Prof. Susanne Albers** (recipient of the Gottfried Wilhelm Leibniz Prize and German theoretical computer scientist at the Technische Universität München)

3. "New Ways of Thinking of the Mobile Phone for Healthcare" by **Prof. Shwetak Patel** (computer scientist and entrepreneur at the University of Washington, and Winner of the 2018 ACM Prize in Computing)

4. “Assistive Technology Solutions for Mobility & Education of Visually Impaired” by **Prof. M. Balakrishnan** (department of CSE, IIT Delhi, and founding Vice-Chancellor of Satya Bharti Institute of Technology, and ACM Eugene L Lawler Award Winner)


The closing remarks for the event were delivered by **Maria Choudhary** (Secretary/Treasurer ACM India), winding up the day's program on a high note.

The event witnessed a participation of more than 1200 students, researchers, faculty members, and professionals from all over India. The livestream also had an active participation with several hundred viewers and the recording has been viewed nearly 2000 times since. More details of the event are available at the event website. The livestream of the event can be replayed here, and a blog post on the opening keynote talk can be found here.

IRISS 2020

Neeldhara Misra / Jayant Haritsa

Over the past two decades, IRISS has provided 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 based on recently published research, which is peer-reviewed by the program committee. The Steering Committee advises the Program Committee to ensure a balance between innovation and continuity across successive IRISS editions.

IRISS 2020 was hosted at the sylvan campus of **Indian Institute of Technology, Gandhinagar,** on 13th and 14th of February, 2020. This year, we received 67 submissions satisfying the criteria of IRISS. Of these, 16 submissions were selected for oral presentation, 8 submissions were shortlisted for lightning talks, and the others were invited for a poster presentation. We are happy to report that from this shortlist, over **50 researchers** registered for participation in IRISS.

IRISS 2020 followed the revitalized program initiated in IRISS 2019 in terms of format. In particular, we retained the expanded two-day duration, and continued to emphasize networking opportunities and career advice. The Early Career Researcher keynote address was delivered by **Prof. Bhavana Kanukurthi** from CSA, IISc Bangalore, on the topic of *Privacy Amplification.* This was followed by a career advice session from young researchers spanning academia, industry and startups, which featured talks by Umang Bhaskar (TIFR), Subodh Sharma (IITD), Nikhil Rasiwasia (Amazon) and Neel Gala (Incore Semiconductors). They generously shared their perspectives on what drove their career choices, and the follow-up discussions empowered participants to form insights of their own as they drew from the experiences of young leaders in diverse fields.

On the second day, the IRISS keynote address was delivered by **Prof. S. Sudarshan** (CSE, IIT Bombay) on *XData: Testing and Grading SQL Queries.* Subsequently, the doctoral students recognized by ACM India for their dissertation excellence presented their thesis work. Jatin Batra of IIT Delhi, who received the ACM India Council's 2020 Doctoral Dissertation Award, spoke on *Dynamic Programming for Scheduling Problems*, while K. Venkatesh Emani of IIT Bombay, who received an Honorable Mention, summarized his research on *Optimization of Data Access from Imperative Programs using Static Analysis*.

The remaining sessions consisted of contributed talks by the student researchers and the following panel discussions:

1. *Career Opportunities and Challenges.* This panel anchored by Manish Gupta (Google

Research India) shed light on research opportunities relevant to scholars in CS and allied areas. The panelists were: R Venkateswaran (Persistent), Yogesh Kulkarni (Icertis), Lipika Dey (TCS Research), Nirmal Jha (Industry Relations Advisor, IITGN) and Satish Sangameswaran (Microsoft Research India).

2. *On Teaching and Learning.* Whether pursuing a career in academia or not, principles of pedagogy can be instructive in more ways than we imagine. This panel anchored by Viraj Kumar (IISc) was an engaging conversation on the significance of teaching in the context of learning, research, and more. The panelists were: Vipul Shah (TCS and CSpathshla), Sudarshan Iyengar (IITR), Arjun Arul (Codechef), and Manish Jain (Center for Creative Learning, IITGN).

In conjunction with IRISS 2020, ACM-W India organized a workshop targeted for women researchers in Computer Science, which was led by Heena Timani (Chair, ACM-W India). Dr. Cherri M Pancake, President ACM, delivered the opening keynote address on how *ACM Can Help Us Change Our Male-Dominated Field*. This was followed by talks from Joycee M Mekie (IIT Gandhinagar), Lipika Dey (TCS Innovation Lab), Kalika Bali (Microsoft Research Lab, India), rounding off with a panel discussion on *Women in Computing: Opportunities in Higher Education and Research*, moderated by Viraj Kumar (IISc Bangalore).

Finally, the students of IIT Gandhinagar put together a cultural program as an entertaining lead-in to the welcome reception dinner on the first evening, creating an ice-breaking environment for all participants to get together. As we segued into the ACM-India Annual Event following IRISS, an informal “AMA (Ask Me Anything) session” with all speakers and delegates gave the participants a great opportunity to interact informally with these experts, and a wide spectrum of stimulating questions were addressed with enthusiasm.

The complete details of the event are available at the event website.

ACM India Doctoral Dissertation Award

Supratik Chakraborty / Hemangee K. Kapoor

The ACM India Doctoral Dissertation Award was established in 2011 to recognize the best doctoral dissertation(s) in Computer Science and Engineering from a degree-awarding institution based in India for each academic year. The award consists of a plaque and a cash award of Rs. 2,00,000. An honorable mention award, if any, is accompanied by a cash award of Rs. 1,00,000. The winning dissertation(s) are also published in the ACM Digital Library. Tata Consultancy Services is the founding sponsor of the award.

The nomination procedure for the ACM India Doctoral Dissertation Award is identical to that of the (worldwide) ACM Doctoral Dissertation Award, and requires a nomination letter by the dissertation adviser, an endorsement letter from the head of the nominating department and optional supporting letters from individuals familiar with the nominee's work. Normally, dissertations defended in the previous academic year are considered eligible for nomination in a particular year. Dissertations successfully defended between August 1, 2018 and July 31, 2019 were considered eligible for nominations for the ACM India 2020 Doctoral Dissertation Award.

The call for nominations for the 2020 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 early July 2019. A total of 29 nominations from 22 academic institutions were received for the award this year. Seven institutions nominated 2 candidates each, while the remaining fifteen institutions sent in a nomination each. The nominations came from 6 broad areas in Computer Science and Engineering. The top 3 areas of nominated dissertations were Machine Learning and related topics, Computer Systems and Theoretical Computer Science.

A jury panel consisting of 11 distinguished computer scientists from around the world was constituted with Prof. Aravind Srinivasan (Univ. of Maryland, College Park, USA) as the Chairperson to review and evaluate the nominations. The other jury members were Prof. Madhusudan Parthasarathy (Univ. of Illinois at Urbana-Champaign, USA), Prof. Anup Rao (Yale Univ, USA), Prof. Debmalya Panigrahi (Duke Univ, USA), Prof. Lakshminarayanan Subramanian (Courant Institute of Mathematical Sciences, New York Univ, USA), Prof. Robert Wille (Johannes Kepler Univ Linz, Austria), Prof. Matthias Zwicker (Univ. of Maryland, College Park, USA), Prof. Shuvra S. Bhattacharya (Univ of Maryland, College Park, USA), Prof. Furong Huang (Univ of Maryland, College Park, USA), Dr. Mukesh Mohania (IBM Research, and now IIIT Delhi) and Prof. Suresh Venkatasubramanian (Univ of Utah, USA).

Jury members reviewed the nominated dissertations and also sought reviews from 9 external experts. The review process lasted three and a half months, and resulted in at least 2 reviews for almost all nominated dissertations. The top ranked dissertations were shortlisted after extensive electronic discussions. Finally, after additional rounds of discussions, the jury selected Dr. Jatin Batra's dissertation titled *"Dynamic Programming for Scheduling Problems"* for the ACM India Doctoral Dissertation Award, 2020. Dr. Batra completed his Ph.D. from Indian Institute of Technology, Delhi under the guidance of Prof. Naveen Garg and Prof. Amit Kumar. The jury also selected Dr. K. Venkatesh Emami's dissertation titled *"Optimization of Data Access from Imperative Programs using Static Analysis"* for Honourable Mention Award, 2020. Dr. Emami completed his Ph.D. from Indian Institute of Technology, Bombay under the guidance of Prof. S. Sudarshan. The announcements of the awards were made by ACM India on January 7, 2020.

The ACM India Doctoral Dissertation Award 2020 and the Honourable Mention Award 2020 were presented during the ACM India Annual Event on February 15, 2020 at IIT Gandhinagar in Gujarat. Tata Consultancy Services (TCS) generously sponsored the awards.

Doctoral Dissertation Award Winners with ACM Officials, Advisors and TCS Official

ACM India Best Student Chapter Awards: 2020

Rajnish Sharma/Shekhar Sahasrabudhe

ACM India is giving Best Student Chapter Awards for last six years. This year there were significant changes in the process and evaluation of the awards.
Strategies were adopted to make sure that whatsoever relevant activities done by Student chapters in their respective campuses, should be published on social media - FaceBook and LinkedIn pages of ACM India. This provided some objectivity while judging the awards.
One more change this year was cash prizes for winners – sponsored by Icertis.
Below chapters were the winners for 2020:

Winner: PICT ACM Student Chapter
Runner Up: Pimpri Chinchwad College of Engineering (PCCOE)
Honorable Mention: GMR Institute of Technology

Awards were given away during ACM India Annual Event at IIT, Gandhinagar.

ACM India Best Student Chapter Awards winners with ACM Officers and Icertis Official

IARCS-ACM India Travel Grants Program

Supratik Chakraborty

Since 2014, ACM India has collaborated with IARCS (http://www.iarcs.org.in/) for providing travel grants to students from Indian universities and institutions for presenting papers in International Conferences. The grant is also extended to deserving cases of faculty from non-Tier 1 academic institutions in India on a case-by-case basis.

The process of receiving applications, reviewing them, arriving at a decision and informing applicants is managed online through a portal. A committee of 7 computer scientists across different academic institutes in India and spanning a spectrum of areas of computer science reviewed and took decisions on the applications. We received 848 applications between April 1, 2019 and March 31, 2020. Of these, 47 applications were accepted. The total amount granted was: Rs. 28.2 lakhs. The average number of days from submission of an application to a
decision being taken was 38.61 days with a standard deviation of 12.34 days.

Below are a few conferences for which travel grants were awarded in the last financial year (this is not a

complete listing)

1. International Conference on Learning Representations (ICLR)
2. World Wide Web Conference (WWW)
3. AAAI Conference on Aritificial Intelligence (AAAI)
4. International Conference on Computer Communications (INFOCOMM)
5. International Conference on Extended Database Technology (EDBT)
6. Design, Automation and Test in Europe (DATE)
7. Empirical Methods in National Language Processing (EMNLP)
8. International Conference on Information and Knowledge Management (CIKM)
9. International Conference on Computer Vision (ICCV)
10. International Conference on Automated Software Engineering (ASE)
11. International Symposium on Mathematical Foundations of Computer Science (MFCS)
12. International Joint Conference on Artificial Intelligence (IJCAI)
13. International Conference on Computer Vision and Pattern Recognition (CVPR)
14. International Conference on Automata, Languages and Programming (ICALP)
15. ACM SIGMOD/PODS International Conference on Management of Data
16. ACM/IEEE Symposium on Logic in Computer Science (LICS)
17. International European Conference on Parallel and Distributed Computing (Euro-Par)
18. International Symposium on Software Testing and Analysis (ISSTA)
19. International Symposium on Fundamentals of Computation Theory (FCT)
20. International Conference on Theory and Application of Cryptology and Information Security (AsiaCrypt)

The awardees were affiliated to various institutes in the country, including, but not restricted to Indian Institute of Science, various Indian Institutes of Technology, International Institute of Information Technology Hyderabad, Indraprashta Institute of Information Technology Delhi, various National Institutes of Technology, Institute of Mathematical Sciences, Indian Statistical Institute Kolkata, Sri Sathya Sai Institute of Higher Learning, Jadavpur University, Jamia Millia Islamia, etc.

MSR-ACM India Academic Research Summit

Madhavan Mukund

The Academic Research Summit (ARS) is organized annually by Microsoft Research (MSR) and ACM

India. ARS is a forum for the computer science research community in India to present and discuss their work. An important goal is to enable meaningful collaborations between research groups from different institutions, to help increase the quality and impact of research across the country.

The fifth edition of ARS was held in Goa on January 30-31, 2020. The event was hosted by BITS Pilani, Goa Campus. The theme of this year's ARS was security, including topics such as digital identity, privacy, fairness, cryptography and verification.

ARS 2020 had two keynote talks, two panel discussions and three sessions of technical talks.

The opening keynote was by Peter Druschel from the Max Planck Institute for Software Systems, Saarbruecken, Germany. He spoke about building ad hoc networks using background communication between devices such as smart phones. Privacy preservation and security are key challenges for such encounter-based networks. Among the use cases described, a highly topical one was contact tracing during a pandemic.

The second keynote was on the Modular Open Source Identity Platform (MOSIP), a solution for digital identities that can be used to build customized national identity systems. The system was presented by Anadi Mishra, Architect, MOSIP, and Sasikumar Ganesan, Security Architect, MOSIP. The main focus was on how privacy and security concerns are addressed in the design of MOSIP.

The first panel discussion was on "Cyber Security - National Policy and Preparedness", moderated by Madhavan Mukund, CMI. The panelists were G Narendra Nath, National Security Council Secretariat (NSCS), and Subrata Rakshit, Centre for AI and Robotics (CAIR).

The second panel discussion was on "Privacy and Security in Healthcare", moderated by Bill Thies, MSR. The panelists were Dr Beena Thomas, Greg Moore, MSR, and Rahul Panicker, Wadhwani AI.

The topic of the first technical track was "Fairness, Transparency and Privacy in Digital systems". The track moderator was Amit Sharma, MSR, and the speakers were Astha Kapoor, Aapti Institute, Emre Kiciman, MSR, and Yair Zick, National Univesity of Singapore.

The second technical track was on "Verification", moderated by R Ramanujam, IMSc. The speakers were Sanjiva Prasad, IIT Delhi, S P Suresh, CMI, and Aseem Rastogi, MSR.

The focus of the final technical track was "Cryptography". The track moderator was Kapil Vaswani, MSR, and the speakers were Chaya Ganesh, IISc, Satya Lokam, MSR, and Vinod Prabhakaran, TIFR.

The webpage for ARS 2020 is at www.microsoft.com/en-us/research/event/academic-research-summit-2020.

ACM India Education Committee and iSIGCSE

Venkatesh R. / Viraj Kumar

The education committee works toward influencing the quality of computing education and related policies in the country. To achieve this goal it has initiated several activities that contribute to promoting quality computing education at all levels starting from schools and extending upto undergraduate level. The CSPathshala initiative takes a point of view on what computational thinking(CT) education ought to be at the school level and has demonstrated its effectiveness by creating teaching content that has been successfully deployed across several schools. CSPathshala has also started a conference, CTiS, that provides a platform for teachers who teach either the CSPathshala curriculum or any other curriculum to share their experiences and challenges with their peers across the country. The next step is to make inroads into educational departments and convince them to include CT as part of the regular curriculum. We have already made some inroads in Tamil Nadu and are working with the Government in AP and Maharashtra. We hope to make some more progress with Government bodies this year. The section on CSPathshala gives more details of last year's activities.

An annual event COMPUTE is organised as platform for researchers in the area of Computing Education to meet and share their best practices with their peers from across the country. The meet includes presentations by invited speakers who share their thoughts on how specific subjects could be taught or assessed. COMPUTE also aims to groom teachers into becoming researchers and holds workshops on conducting research for interested participants. Last year COMPUTE was held in Goa and was well attended. It included a workshop on education research to motivate more faculty to take up research. More details about COMPUTE'19 is presented in the relevant section. The next COMPUTE will most likely be virtual.

We also had a representation in the CC2020 committee. CC2020 is a huge effort by ACM to define a curricular framework that can be used by institutes offering a variety of computing related degrees. It proposes a shift away from knowledge based curriculum design to competency based design that prepares students to contribute productively in whatever career they choose to adopt. In the coming years we will be evangelizing CC2020 to institutions around the country.

This year we will be organizing several webinars targeted both at students to help them develop skills required by the industry and for teachers to expose them to best practises adopted by more experienced experts.

CSpathshala

Vipul Shah

The Association for Computing Machinery (ACM) India started an education initiative, CSpathshala (www.cspathshala.org) in 2016, to promote computing as a science in all schools. The key objectives were to popularise Computational Thinking (CT) and influence education policy to enable its introduction into the curricula. CSpathshala's leadership in CT education in India is increasingly getting noticed and recognized.

Highlights of the key activities in 2019-2020 are listed below:

Bebras India Computational Thinking Challenge

Bebras (www.bebras.org) is an international student Computational Thinking Challenge organised in over 60 countries and designed to get students from all over the world excited about computing. The challenge is a great way to learn about computational thinking and problem solving skills and students can participate without prior knowledge of computational thinking.

2019 Bebras India Challenge saw participation of **178,239** students from 647 schools across 15 states in India. The challenge was conducted both online and offline for Classes 3 to 12 and along with English, offered in Gujarati, Marathi, Tamil and Telugu under the supervision of the school teachers. 2018 Bebras challenge, offered in 4 languages, had seen participation of **137,071** students from 11 states.

CSpathshala has partnered with Sakal NIE (Newspaper in Education) in Bringing Computational Thinking to Schools through the print media. Sakal NIE has 18 editions, published bi-monthly and every edition carries a Bebras task. Through Sakal NIE student editions, CSpathshala has reached out to 35,000 students from 300 schools across Maharashtra, in Pune, PCMC, Baramati, Satara, Ahmadnagar, Nashik, Aurangabad, Jalgaon, Nagpur, Amravati, Kolhapur, Solapur, Yavatmal and Akola.

Two 2018 Bebras India National toppers, Sandeep and Ramu from APTWR, Chintoor, East Godavari received GenWise (www.genwise.in) scholarship of Rs. 1.49 lacs each and participated in the GenWise Summer School (GSS)- Advanced, Bengaluru, April 28- May 19, 2019.

Awareness Workshops and Training Programs

In 2019-20, CSpathshala has organized 3 CT awareness workshops for Government School teachers which included 300+ teachers in Solapur and 50+ computer teachers from Model Schools (Sarva Shikshan Abhiyan) in Andhra Pradesh and Telangana. CSpathshala team has trained 70+ school teachers as master trainers and these teachers are now resources for conducting training programs.

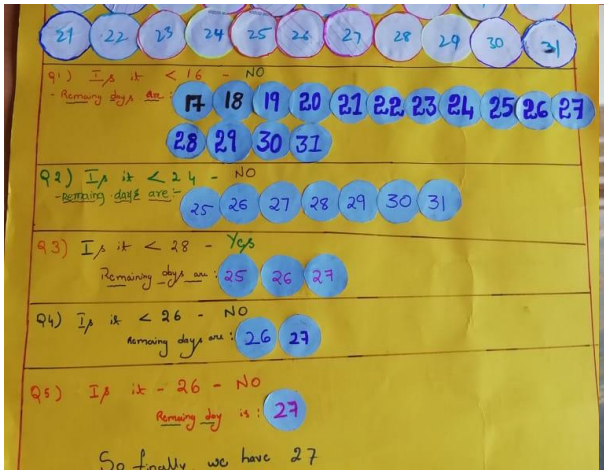
CSpathshala has trained 779 teachers through 12 training programs on CT in partnership with:

- Andhra Pradesh Social Welfare for 30 master trainers and district coordinators who have trained 426 teachers
- UC Berkeley (Professor Dan Garcia), Persistent Systems, CSpathshala, and Plezmo: to train 30 teachers on computational thinking using Snap!, a blocks-based programming language
- SSN College of Engineering, CMI, IMSc, Chennai: to train 70 teachers

- Sakal NIE: for 100+ Zilla Parishad teachers in Khed Taluka and 25+ teachers in PCMC
- Akanksha Foundation: for 7 teachers from 5 Pune Municipal Schools
- IISER Pune: for 40 Maths and Computer teachers from Pune schools
- Plezmo: for 20 teachers on Physical Computing and Coding

So far, 5,600 teachers from 2650 institutes have been trained through 93 awareness workshops and training programs.

Pilot programs



Over 3 Lakh students in 1100+ schools are piloting the CT curriculum in English, Gujarati, Hindi and Marathi. Of these 2/3 schools are government schools largely in the rural parts of the country. In addition to this Tamil Nadu SCERT has included a subset of the unplugged curriculum as part of mathematics curriculum from 2018 and is being taught to over 30,000 schools.

An increasing number of urban schools have replaced existing ICT curriculum with CT curriculum across classes 1 to 8. In Maharashtra, Meghe Group of schools have integrated CT curriculum with Computer and Maths across classes 1 to 8. Meghe Group has also shared adoption of CT curriculum as one of the “Best Practices”. CT activities have been included as part of Science Day in these schools.

To provide opportunity to rural students CSpathshala is implementing pilots across 427 social and tribal

welfare schools in Andhra Pradesh and 400 zilla parishad schools in Khed taluka, Maharashtra.

Andhra Pradesh Social Welfare Education Institutions Society (APSWREIS)

The Computational Thinking curriculum has been introduced as part of Andhra Pradesh Schools Program for Innovation, Research and Excellence (ASPIRE) since Academic year 2018-19 for Classes 5-12 in 427 Andhra Pradesh Social Welfare and Tribal schools with 2,00,000 students across 13 Districts in Andhra Pradesh.

Highlights of the implementation:

- Teachers have localized examples and developed interesting variations
- Teachers shared feedback on how students enjoy CT classes and use art and craft and creative skills for activities
- 2019 Bebras India challenge saw participation of 1,42,300 students

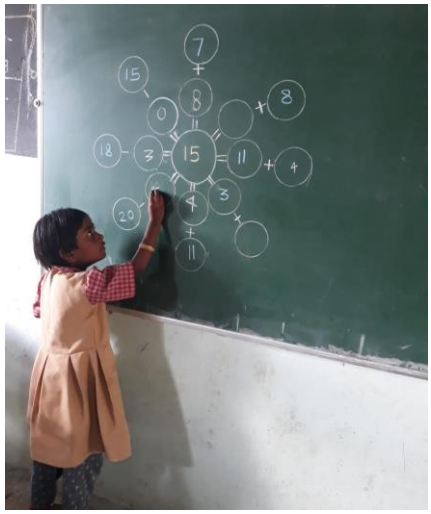
- Sudoku challenge was conducted across 427 schools for classes 5 to 9 with a participation of 1,20,000 students, perhaps the largest Sudoku challenge ever
- Scratch programming fest was conducted for classes 8 and 9 with participation of 700 students from 170 schools
- Master trainers conducted training for 50+ teachers from model schools in Telangana and Andhra Pradesh
- 3,000+ students from the model schools participated in the Bebras challenge. The model schools plan to adopt the CSpathshala curriculum from next academic year

Zilla Parishad Schools, Khed, Maharashtra

CSpathshala has been carrying out a pilot with 50 Zilla Parishad schools in Khed taluka in Maharashtra. The pilot was extended to 400 schools in 2019-20. CSpathshala team in partnership with Sakal NIE have trained 100+ Zilla Parishad all subject school teachers as these schools do not have teachers qualified to teach computing.

Highlights of the implementation:

- Teachers have conveyed that students enjoy the unplugged activities and participate with enthusiasm.
- Some teachers playing the role of master trainers and mentors are guiding teachers locally
- CSpathshala and Plezmo organized a one-day workshop for five Zilla Parishad schools on physical computing and coding.
- About 50 students from ZP Gundalwadi and ZP Jaulkekhurd participated in the 2019 Bebras challenge.



Computational Thinking in Schools (CTiS) Conference

CTiS, an annual conference is organized by CSpathshala to provide a platform for educators to share their experiences, student learnings/stories, outcomes and interesting new experiments.

CTiS2019, the 1st conference on Computational Thinking in schools organized on 20th April 2019 at Pune had participation of more than 140 delegates from 20 cities and 7. With Prof. R Ramanujam from the Institute of Mathematical Sciences, Chennai, as the keynote speaker, CTiS2019 also featured presentations by teachers from across the country on how schools are integrating CT activities with physical computing and mathematics.

In response to the call for abstracts for CTiS2020, 306 abstracts were received. To encourage and support increased participation of the teachers, regional rounds were conducted by Meghe Group of Schools in Nagpur and Andhra Pradesh Social and Tribal Welfare Schools in each of the 13 districts in the state.

Interactions with Government

While working with schools to pilot curriculum in rural and urban and rural areas, we continue our efforts to engage with education boards and policymakers. We have met:

- Principal Scientific Advisor. PSA office is running a flagship program ”codeindia”. We will develop a 1 day module on computational thinking for this program.
- Col V. Ramulu, Secretary, APSWREIS Govt.of AP.Secretary, Social Welfare, AP Shri Rawat. Status update and participation of students in Bebras challenge
- Zilla Parishad, CEO Uday Jadhav and Block Development Officer, Anil Joshi. The meeting led to the decision to extend the pilot to 400 Zilla Parishad Schools in Khed Taluka
- Sabhapati, Khed Taluka Ankush Radke and Education Officer Naikade. Discussions for implementation of CSpathshala curriculum for Academic year 2019-20
- Srininvasa Rao Pokuri, CSE, Andhra Pradesh and Department of School Education for exploring the adoption of CT curriculum by APSCERT and a pilot in 1500 AP model schools

Visibility

- Invited by South Korean Ministry for IT as speaker and panelist at Global Software Education

Conference on CS education in Seoul.

- CACM article on Computational Thinking in India
- Speaker and participant at Bebras task workshops in 2019 in Budapest
- Panelist at ACM India's IRISS seminar
- Article on Computational Thinking sent to Current Science and published in Tech Ed.

Community of Practice

Working towards sustainability of the initiative, CSpathshala is building a Community of Practice through participation of teachers, academicians, volunteers and industry practitioners. CSpathshala organises CTiS, an annual conference to provide a platform for teachers to share experiences and learning.

Teachers have access to experts in CS through local ACM chapters, academia - VNIT in Nagpur, CUSAT in Kochi, CMI/IMSc/SSN Engg College in Chennai, Pune University in Pune. Training programs are hosted by schools which helps interactions and brings the community closer.

CSpathshala is encouraging participation of teachers and volunteers in CTiS, Whatsapp groups (most popular), and blog posts for experience sharing. A pool of master trainers have been trained by the CSpathshala team to create local trained resources to be part of the community to support the schools.

Partnerships

To broaden its outreach, enable scale and impact, CSpathshala has entered into strategic partnerships with the following organizations:

- Cambridge University Press: Coding Sandpit books as derivative of CSpathshala content
- Chintu Gudiya Foundation: Supporting Bebras India challenge
- Codechef, Reliscore: Technology partners
- Dassault Systemes Foundation: Supporting outreach to rural schools
- Genwise: Scholarships to students to attend summer program
- Google India: CTiS, CSpathshala initiative and CodetoLearn
- GS Labs: Supporting training programs in Khed
- IISER Pune: Training programs on computational thinking
- Microsoft India: Supporting CSpathshala initiative
- Plezmo: Physical computing
- Rotary Club of Pimpri: Enabling reach to wider networks of schools
- Sakal NIE (Newspaper in Education): Training programs for teachers in Khed and publication of Bebras problems in NIE editions for year 2019-20
- Teachers of India: Making CSpathshala content available on their teachers portal
- Recherche Tech: Making CSpathshala available on Kolibri channels in multiple languages

CC2020 Steering Committee Report

Abhijat Vichare

Two face to face meetings were held during the period of this report by the CC2020 steering committee. The first one, seen alongside, was hosted in Goa in October 2019 along with the Compute'19 ACM India conference. Various milestones were set for the public review release of the report that was targeted at March 2020 before the next face to face meeting that was due in Japan. In particular, the internal review was targeted for December 2019. The Japan meeting in March 2020 was shifted to Atlanta, Georgia, USA due to the Corona challenges, which at that time, was mainly spreading in Asia. The Atlanta meet saw a revision in the target date for the review release. The report was released for public review on April 30, 2020. The feedback will be collected after June 15, 2020. The date for submission to ACM and other agencies, including ACM India, is set at October 01, 2020. This should see the report out in December 2020.

ACM-India Summer and Winter Schools

Hemant Pande

One of the key initiatives of ACM India in the education space is the ACM India Summer/Winter School Program. The objectives of these schools are:

- Inculcating problem solving as a skill
- Providing exposure to leading experts, advanced topics and taste of research to motivated students
- Exposing students to research opportunities in the career, whether in academia or industry

Salient Features of the Schools:

- Organized at multiple geographical regions in the country
- Conducted by faculty comprising leading experts from academia and industry on advanced topics in computing
- Target audience:
  • senior undergraduate students or those enrolled in Masters or higher degree programs

• around 40 students per school: from nationwide applicants, selected based on academic performance, Statement of Purpose etc. criteria
- 1 to 2 weeks full-time course in June-July or December-January
- Hosted at an academic institution

The Summer Schools 2019 program had the distinction of all schools being sponsored by eminent organizations with technology leadership in the respective school topic. To supplement the expert academic faculty, the sponsor organization also brings on board a couple of experts from their staff, thereby giving the students an understanding of applied research which takes place in industry. Here are the schools that were organized over June and July 2019.

Dates	Title	Host Institute	Co-sponsor
3-15 June	Geometric Algorithms and Their Applications	NISER Bhubaneswar	Dassault Systèmes Foundation - India
3-21 June	Compiler Design and Construction	VIT Pune	NVIDIA
10-28 June	Algorithmic and Theoretical Aspects of Machine Learning	IIIT Bangalore	Microsoft Research India
17-29 June	Detection and Analysis of Malware	COEP Pune	Quick Heal
17 June-5 July	Graph Theory and Graph Algorithms	NIT Calicut	National Centre for Mathematics
2-14 July	Algorithmic Game Theory (for women only)	IIT Gandhinagar	Oracle Academy
8-18 July	Cybersecurity and Data Analytics	IIIT Delhi	Cisco

The valedictory function of Geometric Algorithms School @NISER in pictures

Following the success of Summer Schools 2019, we extended the program to organized winter schools for the first time in December 2019 and January 2020. Given the positive response from students, host institutions and industry sponsors, we plan to make ACM India Winter Schools a regular feature as well. Here are the winter schools that were organized this year:

Dates	Title	Host Institute	Industry Co-sponsor
5-11 December 2019	High Performance Computing	IIT Kanpur	C-DAC
10-16 December 2019	Cybersecurity	NISER Bhubaneswar	
15-24 December 2019	Geometric Algorithms and Applications (mainly for students in Master's program or above)	IISER Pune	Dassault Systèmes Foundation - India
9-14 January 2020	Hybrid Cloud	IISc Bangalore	IBM Research India

The winter school on Hybrid Cloud @IISc Bangalore.

The winter school on Hybrid Cloud @IISc Bangalore.

The winter school on Geometric Algorithms @IISER Pune.

The winter school on Geometric Algorithms @IISER Pune.

Both the summer and winter schools were characterized by enthusiastic response from students across India, with about 70% - 30% male-female ratio. The summer school on Algorithmic Game Theory at IIT Gandhinagar was held exclusively for women students.

ACM-W India

Heena Timani

ACM India Summer School for Women, 2-14 July 2019

The ACM-W Summer School on Algorithmic Game Theory was held from 2nd July to 14th July 2019 at the Indian Institute of Technology, Gandhinagar. The school saw 50 hours of lectures by nine speakers, namely: Meghana Nasre (IIT Madras), Prajakta Nimbhorkar (CMI), Sushmita Gupta (NISER

Bhubaneswar), Dinesh Garg (IBM), Siddharth Barman (IISc), Nidhi Rathi (IISc), Palash Dey (IIT Kharagpur) and Neeldhara Misra (IIT Gandhinagar), apart from several tutorials supported by Chinmay Sonar (MTech scholar, IIT Gandhinagar) and Suman Banerjee (PhD scholar, IIT Kharagpur).

The school focused on topics in computational social choice, covering traditional topics and recent advances alike. The broad themes that were covered included stable and popular matchings, fair division of indivisible items and cake cutting and problems related to elections and voting.. The school witnessed participation from 35 girls who had come from across various colleges in the country. A special session was hosted by Ms. Pallavi Khandelwal from Codechef, who addressed various issues related to women in computing, in particular calling out gender stereotypes related to coding and math, and also issues related to societal biases. This was an especially inspiring session that lasted well beyond the planned time, and participants opened up about the various challenges that they faced even in being able to make it to the present school.

The students appreciated the overall experience of the school. Apoorva Manerikar, a B.Tech final year student in Computer Science at MIT-World Peace University, Pune and a participant at the Summer School 2019, said: “A variety of eminent speakers, a fair-mix of mathematics and engineering graduates and algorithmic game theory - it was a perfect combination for us! The topics were new and we were thrilled at the way they were explained to us here. It was a wonderful and enriching experience.” Another participant, Namrata Sahayam, a Ph.D. scholar from Shri Govindram Seksaria Institute of Technology and Science, Indore, explained that this initiative by IIT Gandhinagar will be very beneficial for all the women-participants in their future careers. According to her, the most interesting part was the ease with which the speakers switched between the basics and detailed real-life examples while covering a wide range of topics. “To experience the education and the entire academic structure of IIT Gandhinagar was like a dream come true! The excellently managed library services and world-class faculty are some of the best features of this Institute,” she said. All participants received certificates of participation in summer school.

ACM-W India Celebration of Women in Computing (AICWiC 2019), 12-13 July 2019

ACM-W India Celebration of Women in Computing 2019 was organized byACM W India and ACM Ahmedabad Chapter at IIT Gandhinagar on 13th July 2019 under the theme “Soft Computing for Global Development”. The conference focused on the importance of Soft Computing for humanity and the career paths for Women in Computing.

The inaugural ceremony started with a Welcome Address by Prof. Rutvi Shah, Web Chair of ACM Ahmedabad Chapter. This was followed by a Ceremonial Address by Prof. Heena Timani, ACM-W India Executive Council Chair in which she talked about the motto and purpose of ACM-W and how each one of us can contribute. During the Ceremonial Address, Prof. Timani, briefed the audience about Association of Computing Machinery being the largest computing education society worldwide that strives unconditionally to raise the bar of students by helping them in terms of career resources, mentoring, workshops, conferences and publications She focused on the objective of AICWiC’19 to support, motivate and inspire women researchers in India by providing them a platform where they can candidly interact with others and hence explained the importance of ACM-W Chapter. She also discussed the various events and awards conducted by ACM and ACM-W in India.The first Keynote address of the day was delivered by Dr Gargi Dasgupta, Director of IBM Research India and CTO of IBM India and South Asia. She elaborated on how Artificial Intelligence is omnipresent in today’s world and how it can be applied to solve real-world problems, particularly in the sphere of Retail and Agriculture.

She also explained the evolution of AI from Narrow to Broad to General AI and how IBM is contributing to the advancements in the field.

The second keynote was delivered by Prof. Joycee M Mekie, IIT Gandhinagar, on the topic “Energy Efficient Hardware for AI/ML”. She highlighted the often-ignored hardware aspects of technologies such as Artificial Intelligence and Machine Learning and introduced the performance and energy challenges faced by researchers today. She focused on the trade-offs between error-resiliency and energy consumption. Other research areas explained by her include Approximation, Energy Efficient Memory Design, Radiation Hardened designs for Space, etc.

The two sessions were very complementary to each other as one highlighted the software aspects of AI, while the other drew the audience’s attention to the hardware aspects.

The keynotes were followed by a Poster presentation in which various students displayed their research work before the jury in the form of posters.

After a lunch break, the session continued with Panel Discussion on the theme “Soft Computing for Global Development/ Women in Computing”.

The Panel Discussion was moderated by Prof. Heena Timani. The panelists elaborated on their career path and encouraged the girls to take their technical careers further.

Prof. Hiteishi Diwanji shared her thoughts on Information Technology and Humanity, and also highlighted the Pros and cons of teaching in Government set up. Prof. Neeldhara Misra connected with the students with various examples from her own life and explained how she made her career in teaching Computer Science to the bright undergraduate students. Prof. Rutvi Shah elaborated on her research in Soft computing and also focused on the non-academic activities in teaching. Ms. Gunjan Lal gave an overview of issues in education for women in STEM fields and emphasized on the different domains in the corporate world in Computing. All the panelists shared how their association with ACM and ACM-W had helped them in their careers. The session came to an end with a Valedictory Award Ceremony where the winners for Lady Ada Programming Competition and Poster Presentation were felicitated with prizes by Dr. Chandrashekhar Sahasrabudhe, COO of ACM India and Suji Gopalan, Country Manager of Oracle Academy India.

The Official Vote of Thanks was delivered by Ms. Gunjan Lal who thanked Oracle, TCS and Reliscore for supporting this initiative and the whole team at IIT Gandhinagar for being such great hosts.

In her Concluding Remarks, Prof. Neeldhara Misra expressed her gratitude to the whole organizing team

of AICWiC'19 and the audience for making the event a huge success.

ACM India Grad Cohort July 6-7, 2019

Introduction: CRA-W, an international computing body, has been organizing the Grad Cohort workshop since 2004 in the US for women graduate students in computing. In 2018 ACM-W India adapted their model for the workshop and started ACM India Grad Cohort for Indian women graduate students. The first event took place in IIT Bombay in July 2018.

This year IIT Delhi hosted the second ACM India Grad Cohort workshop during 6-7 July 2019. The main goal of this workshop was to reach out to Indian women graduate students in the field of computing. In this evolving social context of more and more women taking up Computer Science and CS research as a career, the talks, panels and interactive sessions were planned with a focus on the crucial aspects of women's life in computing careers.

The event was attended by around 60 women participants who came from approximately 20 different colleges and universities across India. Among these women around 55 students were pursuing their PhDs in areas of computing, while the rest were students pursuing their Masters degree. Here is the list of participants.

We were fortunate to have 14 eminent women CS researchers from the Indian academia and industry. Given below is the list of speakers (in alphabetical order of their last names).

The program consisted of talks, panel discussions and interactive sessions.

Varied topics were discussed during these sessions. The speakers talked about how they have chosen interesting research problems to work on over the years, how they persevered despite setbacks, how their research gradually evolved during their PhD years and after graduation in an academic or industrial setting, how they applied for jobs, how they chose between academic and industrial job offers, whether collaborations have been useful for their research and how they did the necessary networking, whether they have faced challenges balancing work with family responsibilities.

More hands-on aspects of choosing PhD advisor, finding a research topic, honing reading and writing skills for literature survey in PhD, time management and building confidence etc. were discussed. There were also ample opportunities over the course of the two days for one-on-one networking/discussions with senior researchers, both from industry and academia.The event was made possible by generous sponsorship from Google India, ACM India and the Department of Computer Science and Engineering ,IIT Delhi.

4th ACM W India National Level Hackathon 16-17 November 2019

Symbiosis Institute of Computer Studies and Research (SICSR) conducted the 4th ACM-W National Hackathon which is an event sponsored by ACM India, Oracle Academy and TCS and co-sponsored by SICSR on the 16-17 November 19 at SICSR.

There was great enthusiasm and excitement among all the participants. There were around 10 teams, each consisting of 3 members along with their mentors. The 4th ACM-W National Hackathon meet was inaugurated and the gathering was welcomed by the students of SICSR Mr. Abdul Muqsit Baig and Ms. Mahimavathi Katta. The dignitaries of the day were Mr. Chandrashekhar Sahastrabudhe (COO ACM-India), Ms. Heena Timani (ACM-W India Chair), Ms. Maria Choudhary (Principal Engineer Oracle, Secretary/Treasurer ACM India), Prof. Dr. Pravin Metkevar, Deputy Director of SICSR. The auspicious event began with blessings of the Lord by the lighting of the lamp and was performed by the dignitaries as well as the participants. A fascinating speech about the ACM and ACM-W was delivered. Each member of the dignitary provided insights regarding the ACM schedules throughout the year, women encouragement in technological fields and so on.

The ACM-W National Hackathon meet was declared open by Prof. Dr. Tejaswani Apte. The Hackathon Session was briefed to the participants by Mr. Yash Dave and Mr. Ashutosh Kumar students of SICSR. The eager participants opted their statement through a random selection. After the distribution of problem statements the mentor started their guidance to the participants regarding the problem. The participants with enthusiasm began the Hackathon. An opportunity to switch the problem statements with the available ones were provided to participants.

The evaluations of all the 10 teams were concluded. The participants took the feedback given by the judges in a positive manner and proceeded further with the development of the project in a dynamic way.

The final judgements regarding each team began wherein each team presented their projects with the demo and illustrated their project to the panel of judges. The teams were judged based on the project work that were done by counter questioning by the judges. Each team presented in a very dynamic manner and each had a very unique approach and the presentations given were very interesting.

The valedictory function was held. A short video showcasing the glimpse of efforts taken for the past three years by SICSR ACM-W Student Chapter. The ACM-W India office bearers were felicitated by Prof.Mr. Harshad Gune.

The most awaited phase of the evening finally arrived. There was a sense of fear, excitement and tension amongst the participants. Everyone eagerly waited for the announcement of the results which was disclosed by Ms. Heena Timani (ACM-W India Chair). The first place was secured by Team EVCA comprise of Ruchika Sharma, Mehak Jain, Nishita from Indian Institute of Technology (IIT) Mandi, second was secured by Team Landslide Vedangi Wagh, Sarita Joshi, Nayan Sabin from PICT Pune and third was secured by Team Innovators Suman Nimbalkar, Tanmayee Tathele and Maziya Fatima MIT ADT University Pune. There was a special recognition award given to Team DAS composed of Divya Suthiv, Aditi Kanojia and Shritama Sengupta from first year BCA SICSR Pune. The event ended on a pleasant and joyful note. A truly memorable and cherished event organised by SICSR.

The Grace Hopper Celebration of India-2019, Bangalore India, November6-8, 2019

The 10th edition of Grace Hopper Celebration India was organized by Anita Borg at Bangalore International Exhibition Centre during 6-8 November 2019. This was co-presented by ACM India.

In GHCI, a student scholar connect session was organized on 8th November by ACM-W specifically to cater to the needs of students. This was a panel discussion on “Looking into the Future: Preparing for the jobs of Tomorrow”. This panel was moderated by one of the ACM-W India council members, Dr.Chitra Babu Prof. and Head SSN College of Engineering, Kalavakkam. The panelists were Dr. Meenakshi D’Souza, Associate Professor from IIIT Bangalore, Dr. Medha Atre from Persistent Systems Ltd and Dr. Sukanyya Misra, Senior Vice President, Master card. This panel discussed how the students can acquire technical as well as non-technical skills and competencies that are essential for the future

job roles that don't even exist today.

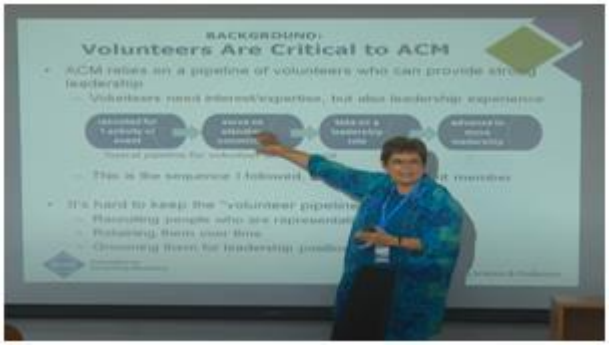
There were interesting insights about how industry and academia should join hands in inculcating/nurturing these skills. It was well-received by the student community and there were lots of interactions with the panelists at the end of the session.

A small meet up of ACM Sponsored Scholars was organized on 7th November during GHCI2019. ACM India sponsored 40 participants which included students and 7 faculty/industry members. ACM-W India council chair Dr. Heena Timani along with 3 council members, Dr. Chitra Babu, Dr. Maushumi Barooah and Ms, Gunjan Lal attended the event. ACM student representatives shared their experiences, learning and various activities they are organizing on their campus under ACM chapter to motivate girls students .They interacted with the student members from various colleges, discussed the activities that have been happening in their respective colleges and also created awareness regarding various other opportunities that they could make use of. Some of the opportunities include programming competition for girls, National level Hackathon for girls, girls in tech community services. ACM W strive to create a community for women in technology where they can come together to learn from each other, bond, network, discuss ideas, and encourage each other.

All the ACM Chapter participants got opportunities to network with other ACM student chapters representatives.

ACM-W India Workshop during ACM India Annual Event 2020

An ACM-W workshop on the theme "Women in computer science and research" was organized on 14th February 2020 during the ACM Annual Event 2020 by the CSE Discipline at IITGN. The event kick-started with a welcome address by Dr. Heena Timani (Chairperson, ACM-W India), during which she highlighted the critical functions of ACM-W. She also explained several programs of this Council in detail, such as the India chapters, Hackathon, the Summer and Winter Schools for girls, Grad Cohort, and scholarships, in the long list of many others.



The first keynote talk was by Prof Cherri M Pancake (President, ACM), during which she described how ACM-W encourages females to revolutionize the field of CSE research. She said that ACM-W is all about being proactive, progressive, patient, strategic, flexible, ready to push oneself to perform the best, able to face challenges head-on, and active change agents, and helps women explore the latest developments in computing.

Next in line was the engaging session by Dr. Arati M. Dixit (Senior Scientist, ARA; Research Associate Professor, NC State University, Raleigh, USA), which shed light on the growing ACM-W leadership team. Now encompassing several regional groups viz., ACM-W North America, ACM-W Europe, and ACM-W South-Pacific Regions, it is in the process of expanding to Africa as well. Dr. Dixit proceeded to explain more about the various scholarships available for girls and women. She also discussed the future possibilities of efficient connections among different student chapters in a particular region.

The invited talk by Dr. Lipika Dey (Principal Scientist, TCS Innovation Lab) on Data Analytics, started with the changing buzz words synonymous with this field. Later followed the discussions on the main challenges of this domain, viz., consistency, explainability, security, reproducibility, and integrity. The session concluded with the message that proper utilization of data analytics can help convert data to information to knowledge. Dr. Dey also advised the females to give their best, utilize all possible opportunities to lead from the front, and adopt a positive outlook on all situations.

One of the most thought-provoking sessions of this workshop was a panel discussion consisting of Dr. Meenakshi D'Souza (Associate Professor, IIIT Bangalore), Dr. Chitra Babu (Professor and HOD, SSN College of Engineering), and Dr. Arati M. Dixit, Dr. Nutan Limaye (Associate Professor, IIT Bombay). They

all shared stories of their journey in computing and the challenges they faced as women (personally and professionally). Talking about the issue of gender ratio in the educational institutes of the country, the panelists advised the female participants on how to carve a niche for themselves and become leaders in computer science.

Dr. Kalika Bali (Principal Researcher, Microsoft Research Lab, India) delivered an enlightening talk on computing technologies that could help in promoting the low resource languages of the country and the globe. She explained the importance of data, techniques, and applications in extending these languages and, hence, enabling efficient networking among communities. Another interesting session by Dr. Joycee Mekie (Assistant Professor, IITGN) provided insights into the world of approximations in computing: what should and shouldn't undergo approximation in an application, and how so - what sort of algorithms should go into it? How to tune it (accuracy) and where to apply it?

This workshop proved to be an excellent platform for the female researchers, students, educators, and professionals in computer science and allied areas, for building discussion forums with some of the most eminent minds in computing.

ACM-W Regional Celebrations, Goa - 13th March, 2020

The Regional Celebrations 2020 of the Association for Computing Machinery - Women's Council (ACM-W India) was held at Padre Conceicao College of Engineering, Verna, on 13th March 2020.The Annual mega-event was jointly organised by ACM, ACM-W, Padre Conceicao College of Engineering (PCCE), Indian Institute of Technology-Goa (IIT-Goa) and Goa University.

Ms. Revati Majumdhar, the Executive Director of Goa Electronics Limited, was the Chief Guest for the Inaugural function. Rev. Fr. Anthony Castelo, Director of Agnel Technical Education Complex welcomed the delegates to the Campus. Ms. Maria D'Souza Chaudhary, Treasurer of ACM India, spoke about the purpose and initiatives of ACM. Also present on the dais were Dr. Mahesh Parappagoudar, Principal of PCCE, Dr.Sudhakshina Dutta, representing IIT-Goa, Assoc.Prof. RamraoWagh, representing Goa University andMs. Razia de Loyola Furtado e Sardinha, Convenor of the event. Program ChairsMr.Siddesh Sawantspoke about the day's events and Ms. Cassandra Fernandes proposed the vote of thanks.

The theme chosen for the celebration was “Security Technology”. Mr. Riyaz Waliker, Head of Security Research Team at Appsecco, Bengaluru, was the Keynote Speaker. Also hosted were the ACM-India National-level Prototype Presentation Competition andACM-India National-level Poster Presentation Competition. Over 30 teams from colleges across India submitted their proposals on “Technology for Women Safety”. The Prototype Presentations were judged by Mr. Ryan Pinto, Director of Innovantix Systems Private Limited, Goa,Ms. AkshataRaikar, Team Lead at PSL Goa and Mr. RiyazWalikar. The Poster Presentations were judged by Mr. Madhav Rangannekar, COO of S J Innovations and Ms. Maria D’Souza Chaudharyof Oracle Systems.

The highlight of the event was an entertaining and insightful panel discussion by eminent women technocrats Dr. Veena Thenkanidiyoor, Dean at NIT-Goa, Prof. Anusha Pai, Head of Computer Engineering, PCCE, Dr. Kavita Asnani, Asst. Professor at GEC, Ms. Maria Chaudhary, MTS at Oracle Systems,Dr.Sudakshina Dutta and Dr.Poonulakshmi V. K., Asst. Professors at IIT-Goa,Ms. Lourdes Soares, Founder ofSabrCare, Goa and Ms. NadishaKamat, Product Owner at Odessa-Bengaluru.

The animated panel discussion on the topic “Does Gender Impact Technology” was moderated by Ms. Razia de Loyola Furtado e Sardinha, Asst. Professor, PCCE.

Special India region issue of CACM in November 2019

P J Narayanan, Pankaj Jalote, and Anand Deshpande

India Region Special Section Co-Organizers

The Indian subcontinent has a population close to 1.8 billion, and is unique due to its diversity of people, cultures, spoken languages, and wide disparities in socioeconomic conditions. The region plays an important role in the global computing landscape with its highly trained manpower, software companies, and top universities that produce students that not only serve local needs, but move around the world and have global impact. We developed this special section to mirror all these facets.

Please see the below URL for details:

https://cacm.acm.org/magazines/2019/11/240362-welcome-to-the-india-region-special-section/fulltext

Industry Initiatives

Hemant Pande

Historically ACM India is more active in the academic circles, with relatively less awareness of its activities in the Indian computing industry. In order to bring parity in ACM India's association with academia and industry, this year witnessed the launch of a number of industry initiatives. These initiatives were aimed at encouraging participation from industry, providing leadership opportunities to industry professionals, and making the industry contribution to computing visible to the community. Numerous ACM India initiatives require financial support, in order to sustain as well as scale. We created opportunities for organizations to come forward to sponsor the initiatives, which helped them serve the community as well as establish their brand in the computing network where ACM India has a significant reach. All these initiatives also fostered industry-academia collaboration as a natural consequence.

Some of the industry initiatives which started and/or matured during the year:

- Industry Webinar: The Industry webinar series can be described as a professional development initiative - by the industry, for the industry - in the sense that an industry technology leader speaks on a computing related topic of industry relevance every other month. This initiative has become a mainstay of industry activities, with eminent thought leaders from industry providing their insights and with an overwhelming response from the participants session after session.

- Industry title sponsorship of summer and winter schools: Hardly any ACM India School now gets organized without participation and title sponsorship by a leading technology organization. Apart from making the program financially self-sustaining and scalable, it has enabled industry-academia collaboration and provided students a holistic content of academic and applied research.
- Industry boot camp: A potential brand-new industry initiative where we run a 3-4 day boot camp for industry participants had to be put in suspended animation due to COVID-19 crisis. The inaugural boot camp on "Blockchain" was scheduled for the last week of March in Pune, with faculty from Persistent Systems, Icertis, C-DAC and IISc. We plan to re-initiate the activity when safe to do so during FY21.
- Institutional Partnership Program: Launched in late FY19, the program has four subscribers (Google, Icertis, Persistent Systems and TCS) at the highest Platinum tier. Thanks to the significant funding provided by these organizations under the partnership, ACM India has the flexibility to sustain multiple initiatives towards advancing computing as a science and profession. As a token of our appreciation, we are able to provide certain benefits to these organizations, such as sponsor branding and discounts in all ACM India owned forums, invitations to participate/present in various forums, and certain complimentary professional memberships.

ACM India blogs:

Hemant Pande

A brand new ACM India initiative during FY20 was the launch of a blog series to:

- provide a platform for theoreticians and practitioners to share their ideas and opinions
- encourage discussions and comments
- provide opportunities for networking and growth of the community in respective technology areas

Representing the strong areas of research from India, we have active blogs on:

- Formal Methods and Theory B
- Software Engineering
- Data Science

Conference Sponsorships

Manish Gupta / Hemangee K. Kapoor

Below were the conferences held in India with ACM approval:

- IHCI '19: India HCI
- FIRE '19: Forum for Information Retrieval Evaluation
- HIPC '19: International Conference on High Performance Computing, Data and Analytics
- ICDCN '20: International Conference on Distributed Computing and Networking
- COMSNETS 2020: International Conference on COMmunication Systems & NETworkS
- ISEC '20: 13th Innovations in Software Engineering Conference
- Security of Information and Networks
- Third International Symposium on Computer Vision and the Internet
- 18th International Conference on Distributed Computing and Networking
- The ACM India Joint International Conference on Data Science & Management of Data
- Advances in Robotics 2019
- 2019 International Conference on Machine Learning and Data Sciences
- The 1st ACM Workshop on Autonomous and Intelligent Mobile Systems

ACM COMPUTE 2019

Venkatesh Kamat and Vandana Naik

(Local Organizing Chairs)

ACM-India organized the 12th annual COMPUTE conference at the International Centre Goa and Goa University from October 10th – 12th, 2019. Like the previous year, the theme of COMPUTE was improving the quality of computing education in the country. The inaugural function was held in the presence of senior academics in the field of Computer Science, Prof. Arun Pujari, Vice-Chancellor of Rajasthan Central University, and Prof. Deepak Phatak, IIT Bombay.

The unique attraction of Compute 2019 was the co-location of CC2020, an annual meeting of international delegates from the IEEE-CS Society and ACM, jointly working to provide guidelines for future computing curricula, including possible new degree programs. The first day of Compute 2019 and CC2020 overlapped, and two CC2020 delegates delivered keynote talks. Dr. Alison Clear, School of Computing, Eastern Institute of Technology, Auckland, New Zealand, gave a talk on Competencies. Dr. Shingo Takada from Information Processing Society, Keio University, Japan, delivered the second talk on CC2020 tool, which will help academics, industry, and prospective students to understand the differences between the various computing sub-disciplines.

Teaching faculty and research students working in the area of CS education were invited to submit one-page abstracts for two separate tracks. 1. Research in Computing Education and 2. Innovative Pedagogy for Computing. We received around 31 abstracts. Out of which, we selected three for a talk under Best Abstracts, and all five had to present posters. About 30 students and teachers were provided scholarships to attend the conference covering their travel and accommodation costs. The three-day conference was attended by about 83 delegates that include ACM council members and paid delegates.

There were five invited talks by senior academics from India sharing their experience in teaching and evaluation of subjects like Computer Architecture, Database Design, Algorithms, and Computer Networks. Special talks were arranged on the subject of programming, specifically on programming pedagogy, on the assessment of introductory programming course, on CodeChef: an online platform for holding programming competitions, and on automated evaluations and grading. One of the highlights of the conference was two Panel Discussions, one on Autonomy as an enabler and second on Industry Expectations from Fresh Employees. Besides, two workshops of 3 hours each were organized, one on Computing Education Research with a focus on teaching-learning of thinking skills and second on GitHub, the repository of resource management.

The conference banquet was held on the first day evening, giving an excellent opportunity for the Compute 2019 and CC2020 attendees to network. The 13th edition of COMPUTE will happen at Visvesvaraya National Institute of Technology, Nagpur, from 10th – 12th December 2020.

CoDS-COMAD 2020

Vasudeva Varma and Rao Kambhampati

(Co-General chairs)

Website: https://cods-comad.in/2020/

The third ACM India Joint International Conference on Data Science and Management of Data (CoDS-COMAD) 2020 (67th ACM IKDD CoDS and 25th COMAD), was held in Indian School of Business (ISB) Hyderabad campus hosted jointly by ISB and IIIT Hyderabad, from January 5 to 7, 2020.

This edition of the conference was fully sold out and we had to stop the registrations keeping in mind the capacity of the main conference hall. We had about 430 registered attendees, which is the largest for CoDS-COMAD so far.

This year, we have also received record sponsorship. We have received a generous grant from Artificial Intelligence journal (AIJ) to support all the student travel grants and two higher level sponsorships in the form of banquet sponsorship from Raquten and YRF (young Researcher Forum) sponsorship from Goldman Sachs. There are 9 platinum sponsors - in addition to the regular industry sponsors American Express, TCS, Microsoft, Adobe, IBM, Google, the new platinum sponsors were ShareChat and Micropoint Computers. The Gold sponsors are Flipkart, NetApp and Verisk. Mastercard, Swiggy and

Cisco are the silver sponsors.
The program chairs Arnab Bhattacharya and Sriraam Natarajan with the help of various track chairs have put together an excellent program that included four Keynote talks by eminent academicians: Anastasia Ailamaki, Kristian Kersting, Amit Sheth, and Dan Suciu; three Invited industry talks by exciting researchers - Tanuja Ganu, Subhabrata Mukherjee, Geeta Manjunath; Six Sister conference talks Spanning across AAAI, VLDB, NIPS, CVPR, ACL; two panels – one focused on research and the other on industry and finally five tutorials and one mini-workshop.

We have received 164 submissions for the research track reviewed by 106 PC members, and have accepted 38 papers, making it 23.1% acceptance. The other tracks of Industry, demo and YRS tracks have received 19, 14 and 65 submissions respectively reviewed by 21, 33, and 33 PC members finally accepting 7, 6 and 26 papers.

In the final program and in the proceedings, we have in the contributed and peer-reviewed section included presentations of 36 Research Papers, 7 industry papers, 4 Demo Papers, and 24 Young Researcher Papers along with a Poster Session.

The conference included 5 technical Tutorials on cutting edge topics given by experts in the respective areas from academia and industry. These are Robust Query Processing: Mission Possible (Jayant Haritsa, IISc), Causal Inference and Counterfactual Reasoning (Amit Sharma, and Emre Kıcıman, Microsoft Research), Graph-based Deep Learning in Natural Language Processing (Shikhar Vashishth, Naganand Y, and Partha Talukdar, IISc), Software Testing & QA for ML Applications: Research Bench to Real World (Shourya Roy, American Express AI Labs and Sandya Mannarswamy and Saravanan Chidambaram - Independent Researchers/consultants) and Fairness in Algorithmic Decision Making (Abhijnan Chakraborty and Krishna P. Gummadi, MPI-SWS). There was a half-a-day workshop on Geospatial Data Science organised by Soumya K Ghosh, Umesh Bellur, PS Acharya and Sumit Sen. All the tutorials and the workshop were well attended.

There were two panel discussions. The topic of the primary panel discussion was “Rapid proliferation of AI agents: Is India ready for growth?” and the panelists included PJ Narayanan, B. Ravindran, Shourya Roy moderated by Sriraam Natarajan. The Industry Panel discussion was on “Data science from lab to the wild” where the panelists were Sarabjot Singh, Ramana Polavarapu, Raghuram Lanka, Partha Talukdar moderated by Om Deshmukh.

This year we are able to help 130 students from across the country to attend the conference by providing Travel Grants. Among the highlights of the conference was the Conference Banquet on 6th January at a historical monument Taramati-Baradari with a music program. The conference also hosted a reception dinner on 5th January 2020.

This year’s joint conference has significantly improved upon the record of all previous editions of the conference. All of the 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 academia and industry to showcase their work and exchange ideas.

iKDD Report

Balaraman Ravindran / Shourya Roy

IKDD, the professional chapter of SIGKDD in India organized a “Data Science in India” event collocated with the ACM SIGKDD in Anchorage, USA on 7th August 2019 (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.

IKDD also organized its flagship event, the CoDS-COMAD joint conference, in Hyderabad during January 2020. The summary of the conference is available elsewhere in the annual report.

Innovations in Software Engineering conference 2020 (ISEC’20)

Atul Gupta

13th Innovations in Software Engineering conference was held during February 27-29, 2020 at IIT Jabalpur. Conference has Key-notes, Research papers, workshops and tutorials. Conference also had special tracks for Startups and Tech-Briefing, Student Software Project Contest and PhD Symposium.

Chapter Technology Solutions Contest / Chapter Summit

Hemant Pande

From 125 submissions to this first year of the “ACM India Chapters Technology Solution Contest”, we had successive selection rounds down to 8 finalists for the Grand Finale which took place at the Chapters Summit on 10 August 2019 at Manipal University Jaipur. We had kept the choice of problem statement open to the chapters as long as it utilized computing technology to solve a real life problem

for societal impact. There was potential for student chapters to associate with the professional chapter in the same city to form a team. Congratulations to the Winner MobiVSR from IIITD Student Chapter, 1st Runners-up BrilTab EduKit-1 from Chitkara Student Chapter, 2nd Runners-up EcoDrive from KLS Gogate Institute Student Chapter, and to the finalists. Thanks are also due to Icertis for sponsoring the contest prizes.

DSP/ESP Schemes

Shekhar Sahasrabudhe

Eight Distinguished Speakers visited India during the year and conducted 20 lectures. There were 14 sessions conducted by Eminent Speakers.

Membership Status

Shekhar Sahasrabudhe

Below is the membership status as on March 31, 2020:

Membership numbers	Mar 31,20
Professional	6,733
Students	4,304
Total	11,037
No. of Professional Chapters	14
No. of Student Chapters	177
No. of SIG Chapters	13
No. of ACM-W chapters	41