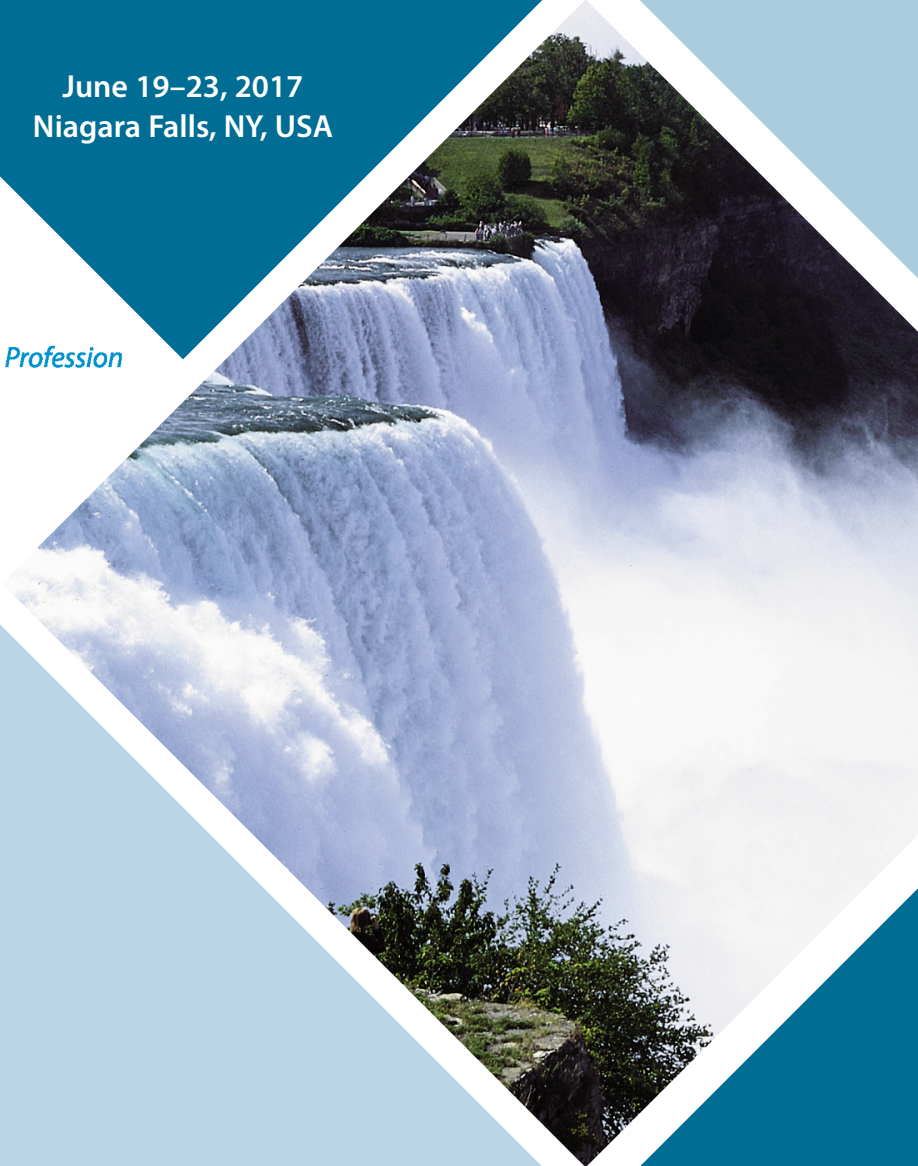


June 19–23, 2017  
Niagara Falls, NY, USA



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# MobiSys'17

Proceedings of the 15th Annual International Conference on  
**Mobile Systems, Applications, and Services**

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# General Chairs' Welcome

It is our great pleasure to welcome you to the *15th ACM International Conference on Mobile Systems, Applications, and Services (MobiSys'17)*. MobiSys is the premier venue for publishing cutting-edge research in mobile systems and applications. This year is its 15th iteration, and we are delighted that the steering committee led by Victor Bahl has decided to bring the conference to Niagara Falls.

The program committee, led by Andrew Campbell and Deepak Ganesan, has come up with an excellent program for this year's conference. They have done a fantastic job in reviewing 190 papers and selecting 34 outstanding papers. We are very thankful to Andrew and Deepak for their exceptional effort in coming with such a wonderful program.

We encourage you to attend the keynote and invited talk presentations. These valuable and insightful talks can and will guide us to a better understanding of the future of mobile. Our keynote speaker is Pattie Maes from MIT Media Lab, and her talk is entitled "*Augmenting the Human Experience*." Norman Abramson from the University of Hawaii has received *SIGMOBILE Outstanding Contribution Award*, and will give his award talk entitled "*ALOHA to the Web*." We also have invited speakers from the government, academia, and industry---Thyagarajan Nandagopal (NSF), Matthai Philipose (Microsoft Research), David Erickson (Cornell), David Chu (Google), Minkyong Kim (Samsung). Lastly, we have a special session on *SIGMOBILE Test of Time Presentation Awards*, and the awardees will recollect and share their experience in writing their papers. We would like to thank all the speakers for giving a talk on these interesting topics.

In addition, we encourage you to attend the poster and demo session. We have selected 15 demos and 34 posters that are outstanding in quality. The poster/demo chairs, Inseok Hwang, Aruna Balasubramanian, Dimitrios Koutsonikolas, and Chunyi Peng, deserve special mention for selecting those excellent posters and demos.

We have multiple workshops on emerging topics, which allow our community to discuss new and exciting directions for future mobile systems. Our workshops chairs, Ben Greenstein and Tam Vu, have done an excellent job in inviting individual workshop chairs and providing all logistical support for them. We thank all the individual workshop chairs for their heroic effort in organizing each workshop.

Putting together *MobiSys'17* was a team effort. First of all, we thank all the authors of papers, posters, and demos for providing the content of the program. We also thank our sponsors, ACM SIGMMOBILE, and our generous supporters, NSF, Microsoft, Intel, Samsung, IBM Research, Nokia Bell Labs, Huawei, Google, and the University at Buffalo. Last but not least, we thank the rest of the organizing team for making MobiSys a very successful event — Karthik Dantu and Lukasz Ziarek (local arrangement chairs), Ardalan Amiri Sani and Robert LiKamWa (web chairs), Hong Lu (registration chair), Aziz Mohaisen and Kyungmin Lee (treasurers), Eduardo Cuervo (publication chair), Mi Zhang (student scholarship chair), and Taeyeon Ki and Sharath Chandrashekhara (app chairs). On behalf of the entire organizing team, we would like to welcome you to Niagara Falls!

**Tanzeem Choudhury**

*MobiSys'17 General Co-Chair  
Cornell University*

**Steve Ko**

*MobiSys'17 General Co-Chair  
University at Buffalo*

# MobiSys 2017 Program Chairs' Welcome

It is our pleasure and privilege to serve as program chairs for ACM MobiSys 2017 - the 15th ACM International Conference on Mobile Systems, Applications, and Services. We hope you enjoy this technical material behind the conference that attracts a diverse set of attendees from both academia and industry and is a leading venue for publications and idea exchange on mobile systems. ACM MobiSys 2017 has a highly selective, single-track program featuring research related to mobile systems and applications. It is an ideal venue to address research challenges facing the design, development, deployment, use, and fundamental limits of these systems.

Notes on the review process: Since its inception in 2003 MobiSys has had a single-blind review policy where the identity of the reviewers is not revealed to the authors but the reviewers know the names, affiliations and contact information of the authors. Beginning 2017, we modified this policy so that the identity of the authors was not revealed to the reviewers during the initial review of the paper. However, once preliminary outcomes were decided, identities of the authors was revealed to enable referees to ask appropriate questions, making it easier to compare the new results with the author(s) previously published work and to ensure that a true advance was being reported.

Our paper review process this year was highly selective. Out of 188 submissions, the technical program committee accepted only 34 for publication and presentation as full papers, yielding an acceptance rate around 18%. Submitted papers underwent a rigorous, multi-stage review process. First, we checked all submissions for compliance, general quality, and topic match. We administratively rejected those not meeting our submission criteria. We assigned 3 reviewers to papers that survived this stage from the program committee and the external review committee. At the conclusion of this stage, those papers where none of the reviewers were enthusiastic about acceptance were rejected. We then assigned at least 2 additional reviewers from the program committee to papers that survived, thus totaling at least 5 reviews per paper. An online discussion phase then ensued, resulting in the PC recommending 60 papers for discussion at the PC meeting. The PC meeting was held in person in Sonoma CA, USA, the day after ACM HotMobile 2017. At the conclusion of the PC meeting, we accepted 34 papers to the conference. Several accepted papers were assigned shepherds to help ensure that the authors produce a final manuscript that satisfactorily addresses reviewer comments.

**The program:** Our program this year covers an exciting set of topics including sensing using acoustic, RF, and light signals, novel communication techniques, deep learning on mobiles, mobile performance, security and privacy, and operating systems. It also includes a keynote by Pattie Maes on human augmentation i.e. how systems can actively assist people with memory, learning, decision making, communication and physical skills, a SIGMOBILE Outstanding Contribution Award talk by Norman Abramson, recognized for his pioneering work on the ALOHAnet wireless networking system, five invited talks on trends in deep learning on mobiles, virtual reality, internet of things, biomedical diagnostics using phones, and large-scale wireless testbeds, brief talks by five Test-of-Time award winners, as well as an extensive poster/demo session.

**Acknowledgements:** Putting together the program for MobiSys 2017 was a team effort. We thank the authors for submitting their best work to MobiSys, and the members of the Technical Program Committee (TPC) and External Program Committee (ERC) for providing detailed and constructive feedback to authors. We were also pleased to see almost full attendance at the TPC meeting, and

very grateful to the TPC members for taking time out of their busy schedules to travel to the meeting. We are indebted to Elizabeth Belding, who in her role as General Chair for HotMobile 2017 handled the logistics for the TPC meeting. We are very thankful to the General Chairs, Tanzeem Choudhury and Steve Ko, for their support with logistics and conference organization as well as their ideas and suggestions that helped shape the conference program. We are grateful to many others who helped with various aspects of conference organization including the Steering Committee, Publicity Chairs (Xia Zhou, Lu Su, Christos Efstratiou, Tadashi Okoshi, and JeongGil Ko), Website chairs (Ardalan Amiri Sani and Robert LiKamWa), Publications Chair (Eduardo Cuervo), and others in the organizing committee for their dependability and commitment to making MobiSys 2017 a success.

As the flagship conference in mobile systems, MobiSys provides a unique opportunity to see important research in the field and have stimulating interactions with experts across a range of sub-areas within the field. We hope that you will find this program interesting and thought-provoking and look forward to seeing many of you at the conference.

**Andrew Campbell**

*Technical Program Co-Chair  
Dartmouth College*

**Deepak Ganesan**

*Technical Program Co-Chair  
University of Massachusetts Amherst*

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