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# MobiCom'14

Proceedings of the 20th Annual  
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**Mobile Computing and Networking**

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# Welcome from the General Chair

Aloha! It is great pleasure and honor to welcome you to the *ACM Annual International Conference on Mobile Computing and Networking (MobiCom 2014)*. This is the 20<sup>th</sup> edition of MobiCom, and what better place to celebrate the 20<sup>th</sup> anniversary than in Maui! This is the first time MobiCom is hosted on an island. Let's take advantage of the beautiful scenery and ocean view while celebrating the technical advancement and impact we made over the last 20 years and discussing future research directions.

We have an exciting program full of innovative ideas and thought leadership. I am looking forward to four keynotes. Sanjit Biswas (CEO of Meraki, VP/GM of Cisco Cloud Computing Group), who was a best student paper award winner in MobiCom 2005, returns to give a keynote. He will share his journey from his graduate student days to founding a start-up and a high profile acquisition in 2012. Our second keynote will be given by Jeff Gelhlaar (VP of Technology for Qualcomm Technologies) on his vision of future mobile computing. The third keynote is given by this year's Outstanding Contributions Award winner, Leonard Kleinrock (Distinguished Professor of Computer Science Department at UCLA). He is a father of the Internet and won this award for "pioneering contributions to the first multi-hop packet switched radio network which formed the foundation for modern wireless networks." Our last keynote speaker is Kit Colbert (CTO of End User Computing at VMWare) who will present an industry perspective on challenges in mobility.

Ashutosh Sabharwal and Prasun Sinha put together a strong technical program with 36 top rate papers. Chiara Petrioli and Igancio Solis selected seven workshops with emerging topics and worked with each workshop organizers to continue the MobiCom tradition of premium workshops. Shyamnath Gollakota, Ilias Leontiadis, and Ramya Raghavendra are responsible for recruiting 20 very exciting demos. Souvik Sen and Xinyu Zhang are chairing the poster session with 28 posters that showcase promising preliminary research. Saumitra Das is taking care of the Student Research Competition. Continuing the success of the first mobile app competition last year, Eduardo Cuervo and Emiliano Miluzzo will oversee the competition. Thyaga Nandagopal organized two panels that promise to engage the audience. The first panel will discuss the societal challenges of mobile computing, and will be moderated by Lakshminarayanan Subramanian. The second panel welcomes back pioneers and early contributors to MobiCom who will share their vision of the future; this panel will be moderated by Victor Bahl.

In addition, I am grateful for the excellent services from the following organizing committee members. Joseph Camp worked with me on finances. Eugene Chai, Aline Carneiro Viana, and Yung Yi handled publicity. Konstantinos Pelechrinis was the master of the conference website. Aakanksha Chowdhery and Wenjun Hu prepared the publications, including the proceedings you are looking at. Katia Obraczka and Patrick Tague are the registration chairs. Dimitrios Koutsonikolas awarded student travel grant. Marco Levorato and Rui Zhang provided local arrangements. Aaron Schulman assisted me in corporate sponsorships. This year we are blogging for the first time in MobiCom history. I encourage everyone to read, comment, and participate in our blog. Riccardo Crepaldi and Lara Deek are your bloggers and social media chairs.

A conference like MobiCom cannot be successful without the generosity and participation from the sponsors. Our sponsors enable more student participation as well as high quality facility and service. National Science Foundation is our Platinum Sponsor. Cisco/Meraki and Microsoft are the Gold Sponsors. Facebook, Google, IBM, Inria, and Qualcomm are Silver Sponsors. HP and NEC are Bronze Sponsors. Thank you sponsors!

Being a General Chair of MobiCom is an amazing honor and it comes with great responsibility. I have received incredible help not only from the organizing committee, but also from Victor Bahl, the steering committee chair, Suman Banerjee, the SIGMOBILE chair, and April Moskus and rest of the ACM staff. I thank them sincerely.

Enjoy the conference and location! I hope your MobiCom 2014 experience is technically stimulating while reconnecting with old friends and making new friends. Mahalo.

**Sung-Ju Lee**

*MobiCom 2014 General Chair*

# Technical Program Committee Chairs' Message

Welcome to the 20th Edition of MobiCom, the Annual International Conference on Mobile Computing and Networking. Now past its teens, MobiCom continues to grow as the powerhouse conference with a vibrant, dedicated and growing community of researchers and practitioners in mobile systems and wireless networks.

**36 Accepted Papers:** Any research community is judged by the quality of its work and the impact of that work on actual practice. On both those counts, MobiCom 2014 is set to build on the fantastic tradition of previous years. This year's program has 36 high-quality papers, which is the highest number ever accepted. The increase in final number of papers accepted is a sign of widening of the program scope and growth of the research community. The papers range from traditional topics which continue to be of critical interest - like Wireless LANs, cellular networks and others and new emerging areas of wireless charging, visual communications and wireless data-centers among many others. The acceptance rate was 16.4% (36/220).

**TPC Composition:** MobiCom is "notoriously" famous for its brutally rigorous review process, which is perhaps the key reason why authors tend to submit their best work to MobiCom. The "guardians of quality" have always been the Technical Program Committee (TPC). To ensure we have topical experts in all major categories, we expanded the TPC to 51 members, again the biggest TPC in MobiCom history. The TPC included 13 members from industry - Microsoft Research, Facebook, Google, Narus, NEC Labs, HP Labs, Alcatel Lucent and Intel Labs, a member from National Science Foundation and a member from IMDEA. Furthermore, 6 members are from Europe, 4 from Asia-Pacific, 1 from Africa and rest from North Americas.

**Review Process:** This year, we also added two new elements to the review process - conditional accepts and anonymous shepherding. The call for papers attracted 220 papers (after rejecting non-conforming papers) from five continents: Asia, Europe, Africa, North America and South America. The review process was conducted in 4 phases using the HotCRP system, where the first three phases were identical to previous years'. In the first phase, each paper was reviewed by at least 3 TPC members. After the first round of review, the reviewers discussed the papers online and the consensus decision was marked for each paper. After the first phase, 76 papers were moved to the second phase of reviews. In the second phase, at least 2 more TPC members provided additional reviews. In the second round, we asked the first round reviewers to provide suggestions for most suitable TPC member for second round reviews. In addition, we also sought their suggestion for external reviewers if there was a need for additional expert opinion. After the second round review and online discussions, 68 papers were selected to be the part of third phase - the TPC meeting discussion. The TPC meeting was held at Rice University on May 29-30, 2014. The one and a half day meeting was attended by 46 members in person and 5 members joined via conference call.

To ensure fairness and preserve the anonymity of all authors and reviewers, papers authored by PC chairs were mixed with a random selection of other papers and were handled out of band by Raghupathy Sivakumar and Nitin Vaidya. The reviews were handled using the HotCRP system using "tokens," a mechanism designed to keep the reviewers anonymous even from the chairs. The related discussions were handled out-of-band over emails between the reviewers. A total of 10 such papers were handled out-of-band of which 5 were discussed at the TPC meeting. Note that these numbers are included in the above paragraph.

The chairs did not participate in any awards committees.

**New Elements in the Review Process:** At the start of the TPC meeting, the TPC Chairs informed all TPC members that there is no preset target for the number of accepted papers. That allowed the TPC members to focus only on the paper under discussion and whether they consider it as MobiCom quality or not. In addition, the TPC members were informed that all papers will only be *conditionally accepted*, till the authors adequately address all reviewers' concerns. The conditional accept was the first new element in the review process, unlike prior years in which the final decision was made in the TPC meeting itself. At the end of the two-day meeting, 38 papers were conditionally accepted. Two conditionally accepted papers were appealed within 24 hours of the meeting, as the TPC members found additional support to reject those papers. An online discussion followed and a consensus decision was reached to reject the two appealed papers. Thus, the TPC members continued to work *even after the TPC meeting was over!*

The second new element was that of double-blind shepherding, which was a departure from previous years where the double-blind barrier was removed between shepherds and authors after the TPC meeting. The two new elements, conditional accept and double-blind shepherding, were added to address the general feeling in the community that the authors tend to make only minimal changes after they get their accept notification. Further, in the old method, the shepherds had no power to enforce necessary changes, since the authors know their identities *and* authors know that their papers are accepted. The new process, while very cumbersome to implement due to lack of adequate support in HotCRP, was appreciated by many members. The authors, knowing that their paper can be rejected, worked wonders in revising and addressing all concerns. And shepherds felt empowered to conduct their job without any fear of retribution. A very small number of papers were in fact very close to being rejected during the shepherding process, but were ultimately kept in the program after much discussion among TPC members. Some papers underwent significant revisions and within a course of three weeks, they were revised several times to address all concerns. For the first time, we got written comments like "Wow, the authors put in some serious work to revise the paper." As TPC Chairs, we could not be more elated with the result of the new changes.

**Sincere Thanks Goes To:** We would like to thank all authors who submitted papers to the conference. We would like to thank the entire TPC for their extremely hard work in reviewing a large number of papers and then providing timely and detailed reviews for each of them. In addition an extra thanks goes to the TPC members for being the guinea pigs for a number of important changes made to the review process. The external reviewers also did an excellent job in providing additional reviews for some papers and we are very thankful to them..

We sincerely thank Raghupathy Sivakumar and Nitin Vaidya for handling the out-of-band papers. During the entire process Dong Li provided very timely support for the HotCRP system as it had to be patched several times. Ms. Caroline at Rice took extreme care of impeccably handling all the logistics of the TPC meeting including the delicious food that we enjoyed while at Houston.

**Ashutosh Sabharwal and Prasun Sinha**  
*TPC Co-Chairs*

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