



**Association for
Computing Machinery**

Advancing Computing as a Science & Profession

NEWS RELEASE

Contact: Jim Ormond
212-626-0505
ormond@acm.org

MOBICOM, LEADING VENUE FOR MOBILE COMPUTING AND WIRELESS NETWORKING RESEARCH, GOES VIRTUAL

New York, NY, September 17, 2020 — The Association for Computing Machinery’s Special Interest Group on Mobility of Systems, Users, Data and Computing (SIGMOBILE) will hold its [International Conference on Mobile Computing and Networking \(MobiCom 2020\)](#) September 21-25 in a virtual setting for the first time ever.

MobiCom is a highly selective, premier international forum for addressing networks, systems, algorithms and applications that support the combination of mobile computers and mobile and wireless networks.

As in past years, the conference will feature research on the hottest innovations transforming our connected world, including computational health, machine learning for wireless networks, the impact of 5G technologies, and wireless sensing, among others.

“The world seems like a vastly different place than when we held MobiCom 2019, but the importance of mobile computing has remained the same, and may be even more vital now,” said MobiCom 2020 General Co-chair Jon Crowcroft, University of Cambridge. “As workforces, governments and other institutions around the world are operating remotely for the most part, connectivity is as important as ever. MobiCom has been and will continue to be a place where research on the solutions to today’s and tomorrow’s challenges are shared.”

“As the conference moves to a virtual platform, we have rethought the format of the conference in order to ensure that participants have opportunities to participate and interact with the presenters as well as other participants,” said General Co-chair Hamed Haddadi, Imperial College London. “In order to allow the audience to get enough technical details of the works before the sessions, a video about each paper will be made available on the MobiCom YouTube channel, and the full papers will be published in the ACM Digital Library.”

The MobiCom 2020 conference program will feature six keynote addresses, a roster of top-line research papers, workshops, panels, a Student Research Competition, and the N2Women Event, among other facets.

2020 ACM MOBICOM HIGHLIGHTS

Keynote Speakers (Partial List)

“Electronics on the Brain”

George Malliaras, University of Cambridge

One of the most important scientific and technological frontiers of our time is the interfacing of electronics with the human brain. Malliaras will present and discuss examples of novel devices for recording and stimulation of neurons within the brain, and show that organic electronic materials offer tremendous opportunities to study the brain and treat its pathologies. This endeavor promises to help understand how the brain works and deliver new tools for diagnosis and treatment of pathologies including epilepsy and Parkinson’s disease.

“What's next in 5G infrastructure?”

Durga Malladi, Qualcomm Technologies

5G networks are poised to become the unifying connectivity fabric – across spectrum, services and deployment models. Venues, enterprises, industrial operations, healthcare, and city infrastructure will all become smart connected spaces, big or small, and in public or private networking domains. Learn how network architectures will evolve to situate network functions where they most efficiently and securely cater to the unique requirements of each use case, and scale easily with demand. Join this keynote to get perspective on some of the exciting milestones along this 5G network evolution journey such as disaggregated network functions, open interfaces, virtualization, with the opportunistic use of commercial off-the-shelf (COTS) white boxes and inline accelerators, high performance radios, and lower latency with intelligence at the wireless edge.

“From Research to Product: Stories from the Frontlines of R+D”

Alex Kauffmann, Google

Preparing research for production—so-called technology transfer—is, beyond the lab, a fraught and often thankless exercise in organizational diplomacy, problem solving, and improvisation. After nearly a decade of bridging the research and product worlds at Google, Kauffmann has many stories of tech transfer that highlight lessons he has learned—lessons he hopes can help others transform research into cutting-edge tech that ships quickly and at scale.

“Disaggregating the Cellular Radio Access Network with O-RAN”

Sachin Katti, Stanford University and VMware

Since cellular networks have been deployed, the radio access network (RAN) has been a vertically integrated and closed part of the network. This has limited network agility, increased cost, hindered innovation and has led to vendor consolidation. Over the past few years, for the first time ever, this has

begun to change. Katti and colleagues founded the xRAN forum out of our research on cellular network virtualization in 2016 which has now evolved to the O-RAN alliance that is defining the open RAN architecture. Katti will discuss the genesis of open RAN architecture, initial successes with the deployment of the Rakuten and Dish networks in Japan and the US, and the road ahead.

Accepted Research Papers (Partial List)

More than 62 research papers will be presented throughout nine different sessions. Below we highlight a sampling of papers to be presented. For a full list of papers, visit the [MobiCom 2020 Accepted Papers](#) page.

"Airdropping Sensor Networks from Drones and Insects"

Vikram Iyer, Maruchi Kim, Qiuyue Xue, Anran Wang, Shyamnath Gollakota, University of Washington

The authors present the first system that can airdrop wireless sensors from small drones and live insects. In addition to the challenges of achieving low-power consumption and long-range communication, airdropping wireless sensors is difficult because it requires the sensor to survive the impact when dropped in mid-air. Their design takes inspiration from nature: small insects like ants can fall from tall buildings and survive because of their tiny mass and size. Inspired by this, they design insect-scale wireless sensors that come fully integrated with an onboard power supply and a lightweight mechanical actuator to detach from the aerial platform.

"Ghost Calls from Operational 4G Call Systems: IMS Vulnerability, Call DoS Attack, and Countermeasure"

Yu-Han Lu, Chi-Yu Li, Yao-Yu Li, Sandy Hsin-Yu Hsiao, Wei-Xun Chen, National Chiao Tung University; Tan Xie, Guan-Hua Tu, Michigan State University

IMS (IP Multimedia Subsystem) is an essential framework for providing 4G/5G multimedia services. It has been deployed worldwide to support two call services: VoLTE (Voice over LTE) and VoWi-Fi (Voice over Wi-Fi). VoWi-Fi enables telephony calls over the Wi-Fi network to complement VoLTE. In this work, the authors uncover that the VoWi-Fi signaling session can be hijacked to maliciously manipulate the IMS call operation. The authors also propose and evaluate recommended solutions.

"Challenge: COSMOS: A City-Scale Programmable Testbed for Experimentation with Advanced Wireless"

Dipankar Raychaudhuri, Ivan Seskar, Jakub Kolodziejcki, Michael Sherman, Sumit Maheshwari, Rutgers University; Gil Zussman, Tingjun Chen, Zoran Kostic, Harish Krishnaswamy, Craig Gutterman, Columbia University; Thanasis Korakis, Panagiotis Skrimponis, New York University; Dan Kilper, University of Arizona; Xiaoxiong Gu, IBM Research

This paper focuses on COSMOS (Cloud-enhanced Open Software-defined Mobile wireless testbed for city-scale deployment). The COSMOS testbed is being deployed in West Harlem (New York City) as part of the NSF Platforms for Advanced Wireless Research (PAWR) program. It will enable researchers to explore the technology "sweet spot" of ultra-high bandwidth and ultra-low latency in the most demanding real-world environment. The authors describe the testbed's architecture, the design and deployment challenges, and the experience gained during the design and pilot deployment.

“EarSense: Earphones as a Teeth Activity Sensor”

Jay Prakash, Singapore University of Technology and Design, University of Illinois at Urbana-Champaign; Zhijian Yang, Yi-Lin Wei, Haitham Hassanieh, Romit Roy Choudhury, University of Illinois at Urbana-Champaign

This paper finds that actions of the teeth, namely tapping and sliding, produce vibrations in the jaw and skull. These vibrations are strong enough to propagate to the edge of the face and produce vibratory signals at an earphone. By re-tasking the earphone speaker as an input transducer – a software modification in the sound card– the authors demonstrate that are able to sense teeth-related gestures across various models of ear/headphones.

“Self-Reconfigurable Micro-Implants for Cross-Tissue Wireless and Batteryless Connectivity”

Mohamed R. Abdelhamid, Ruicong Chen, Joonhyuk Cho, Anantha P. Chandrakasan, Fadel Adib, Massachusetts Institute of Technology

The paper introduces *self-reconfigurable micro-implants*—which are batteryless and wireless micro-implants that can change and adapt to different in-body environments while maintaining connectivity. Such sensors could be used for continuous monitoring of biomarkers and tumors, ultra-long lasting drug delivery systems (e.g., for patients with Alzheimer’s or Osteoporosis), and closed-loop control systems with real-time feedback (e.g., artificial pancreas for Diabetes’ patients).

WORKSHOPS

- [Workshop on Mobility in the Evolving Internet Architecture \(MobiArch 2020\)](#)
- [4th International Workshop on Deep Learning for Mobile Systems and Applications \(EMDL\)](#)
- [14th ACM Workshop on Wireless Network Testbeds, Experimental evaluation & Characterization \(ACM WiNTECH 2020\)](#)
- [Drone-Assisted Wireless Communications for 5G and Beyond \(DroneCom\)](#)
- [Cryptocurrencies and Blockchains for Distributed Systems \(CryBlock\)](#)
- [The 3rd Workshop on Benchmarking Cyber-Physical Systems and Internet of Things \(CPS IoTBench\)](#)
- [Millimeter-Wave Networks and Sensing Systems \(mmNets 2020\)](#)
- [1st Workshop on Experiences with the Design and Implementation of Frugal Smart Objects \(FRUGALTHINGS 2020\)](#)
- [Light up the IoT \(LIoT 2020\)](#)

TUTORIALS

- [COSMOS \(“Cloud enhanced Open Software defined MObile wireless testbed for city-Scale deployment”\) Testbed for Advanced Wireless and Edge Cloud Research](#)
- [Multipath Transport Protocols](#)

About SIGMOBILE

[SIGMOBILE, the ACM Special Interest Group on Mobility of Systems, Users, Data and Computing](#), is the international professional organization for scientists, engineers, executives, educators, and students dedicated to

all things mobile. SIGMOBILE members work in academia, industry, and government. They are students, teachers, practitioners, policymakers, and scientists.

About ACM

[ACM, the Association for Computing Machinery](#), is the world's largest educational and scientific computing society, uniting educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

###