MOBILE COMPUTING & COMMUNICATIONS REVIEW
Volume 21, Issue 1 • March 2017

GetMobile

BRINGING HOME BABY

How smart devices can help new parents

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GetMobile

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Cover photo, Iqbal Mohomed

MESSAGE FROM THE EDITOR-IN-CHIEF

Eyal de Lara

IN THIS ISSUE, we highlight three papers from ACM MobiCom 2016. The issue also includes one highlight paper from ACM MobiSys 2016, which was originally meant to appear in the previous issue, but was delayed.

The paper, "Flying Blind with Reactive Control of Aerial Drones," by Luca Mottola and Kamin Whitehouse, describes a new approach to aerial drone autopilot design that executes the navigation logic only in response to meaningful variations in sensor readings. The approach achieves higher accuracy, and reduces energy consumption, improving flying time.

In "Scaling Mobile Network Capacity Aggressively with QuickC," Rakesh Misra, Aditya Gudipati and Sachin Katti describe an approach that enables high-density micro cell deployments using a backhaul that makes possible inexpensive low latency coordination with neighboring macro and small cells.

In "Gyro in the Air: Tracking 3D Orientation of Batteryless Internet of Things," Teng Wei and Xinyu Zhang describe a system that can remotely sense the orientation of a passive object by measuring the phase of signals returned from an array of batteryless RFID tags attacked to the object.

Finally, in "MobileInsight: Analyzing Cellular Network Information on Smartphones," Yuanjie Li, Chunyi Peng, Zengwen Yuan, Haotian Deng, Jiayao Li, and Tao Wang describe a smartphone-based software tool that provides access to the low-level (bellow IP) 3G/4G protocol data.

The rest of the issue consists of four more columns:

The Makers column features an article by Iqbal Mohomed that explores the growing number of connected devices specifically designed to meet the needs of expectant parents and parents with young children.

In the Retrospectives column, Daniel Siewiorek reflects on the first decade of development of wearable computers. The article describes how the creation of wearable computers demanded the combined efforts of a multi-disciplinary team with expertise in design, computer engineering,

computer science, human computer interaction, and management. Siewiorek also discusses early efforts to find killer applications, as well as lessons learned, and open research challenges.

In the Arm's Length column, Yuan-Ting Hu and Alexander G. Schwing provide a high-level introduction to machine learning with a focus on deep learning. The paper discusses applications that leverage deep learning as well as future directions.

In the Standards column, Guosen Yue, Lingjia Liu, Yongxing Zhou, and Jianzhong Zhang review recent efforts on multiple-input multiple-output (MIMO) antenna technology aimed at dramatically increasing wireless bandwidth in 5G cellular systems.

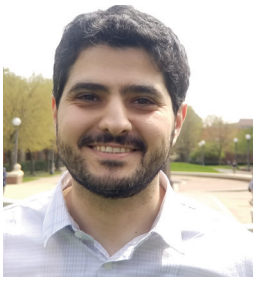
I hope you enjoy this issue, and I welcome your thoughts about GetMobile in general, and this issue in particular.

Editorial Board Changes

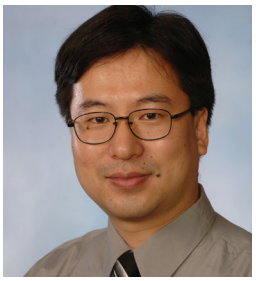
Matthai Philipose is stepping down from the editorial board. As the founding editor of the Arm's Length column, Matthai was the driving force behind a number of engaging articles that have helped the GetMobile readership keep abreast of developments on areas outside of SigMobile's traditional domain. I thank him for all of his hard work.

It is my pleasure to extend a warm welcome to Romit Roy Choudhury, Haitham Hassanieh, and Shiwen Mao, the newest members of the editorial board. Romit and Haitham are taking over the Arm's Length column. Shiwen joins Michelle X. Gong as co-editor of the Standards column.

Romit Roy Choudhury
Romit Roy Choudhury is a Professor and Jerry Sanders III Scholar of ECE and CS departments at the University of Illinois at Urbana Champaign (UIUC). He joined UIUC in Fall 2013, prior to which he was an Associate Professor at Duke University. Romit received his PhD in the CS department of UIUC in Fall 2006. His research interests are in wireless networking, mobile sensing, and mobile computing. He has received a few research awards, including the ACM SigMobile Rockstar Award, UIUC Distinguished Alumni Award, Google and IBM Faculty Research Awards, the Hoffmann Krippner Award for Engineering Innovations, the NSF CAREER Award, and a few best paper awards, as well.



Haitham Hassanieh
Haitham Hassanieh is an Assistant Professor in Electrical and Computer Engineering and Computer Science at the University of Illinois at Urbana Champaign. His research focuses on wireless systems, computer networks, and algorithms. He recently won the ACM Doctoral Dissertation Award. His PhD thesis also won the Sprowls Award for best PhD thesis in computer science at MIT in 2016. His algorithmic contributions led to the development of the Sparse Fourier Transform, which was named by Technology Review as one of the Top 10 emerging technologies in 2012. As well, Haitham won the SIGCOMM 2010 best paper award.



Shiwen Mao
Shiwen Mao received his PhD in electrical and computer engineering from Polytechnic University, Brooklyn, NY in 2004. He is currently the Samuel Ginn Distinguished Professor and the Director of the Wireless Engineering Research and Education Center, Auburn University. His research interests include wireless networks and multimedia communications. He received the 2015 IEEE ComSoc TC-CSR Distinguished Service Award, the 2013 IEEE ComSoc MMTC Outstanding Leadership Award, and the NSF CAREER Award in 2010. He was a co-recipient of Best Paper Awards from IEEE GLOBECOM 2016 & 2015, IEEE WCNC 2015, and IEEE ICC 2013. As well, he received the 2004 IEEE Communications Society Leonard G. Abraham Prize in the Field of Communications Systems.

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