GetMobile

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CONTENTS

MESSAGE FROM THE EDITOR-IN-CHIEF

CONTRIBUTORS

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Eyal de Lara

IN THIS ISSUE, we showcase research that addresses challenges of interest to the GetMobile readership that appeared at conferences that are not sponsored by SigMobile. This *best of the rest* issue includes three highlight articles:

From ACM SIGCOMM 2016, we highlight two papers: "Eliminating Channel Feedback in Next-Generation Cellular Networks," by Deepak Vasisht, Swarun Kumar, Hariharan Rahul, and Dina Katabi, introduces a technique that lets the cellular base stations on large MIMO systems estimate the downlink channels without any user feedback. While downlink channel estimation is simple for networks where both the access point and its clients transmit on the same frequency, such as Wi-Fi, the majority of cellular networks transmit data from the phone and base station at different frequency bands. This paper describes how to infer the wireless channel on one frequency band by observing the channel on a different band; and, "Inter-Technology Backscatter: Towards Internet Connectivity for Implanted Devices," by Vikram Iyer, Vamsi Talla, Bryce Kellogg, Joshua R. Smith and Shyamnath Gollakota, presents an approach that uses backscatter communication to transform wireless transmissions from one technology to another (e.g., Bluetooth to Wi-Fi), on the air. The authors leverage this technology to create a contact lens and an antenna for an implantable neural recording device to enable direct communication with commodity devices, such as smartphones and watches.

The third highlight article, titled "LIBS: A Lightweight and Inexpensive In-Ear Sensing System for Automatic Whole-Night Sleep Stage Monitoring," by Anh Nguyen, Raghda Alqurashi, Zohreh Raghebi, Farnoush Banaei-Kashani, Ann C. Halbower and Tam Vu, appeared at ACM SenSys 2016. This article describes a wearable sensing system for assessing sleep quality in clinical sleep studies. The device consists of a pair of earbuds placed on the patient's ear canals that capture biosignals representing electrical activities of the brain, eyes, and muscles.

The rest of the issue consists of three more columns:

The past→future column features an article titled "Are Wearables Ready for Secure and Direct Internet Communication?" by Harini Kolamunna, Jagmohan Chauhan, Yining Hu, Kanchana Thilakarathna, Diego Perino, Dwight Makaroff, and Aruna Seneviratne. The authors review recent advances in communication technology in wearable devices, and conclude that direct communication between state-of-the art wearables and the Internet is both secure and efficient.

The Arm's Length column presents an article titled "Bio-Behavioral Sensing: An Emerging Engineering Area" by Ashutosh Sabharwal and Ashok Veeraraghavan. The authors define bio-behaviour sensing as the unobtrusive and continuous measurement of behavioral, psychosocial and biological processes, and describe previous efforts in assessing the effectiveness of medication delivery, and monitoring mental health and stress.

Finally, the Standards column features an article titled "An Overview of 3GPP Cellular Vehicle-to-Everything Standards" by Xuyu Wang, Shiwen Mao and Michelle X. Gong. This article provides an overview of 3GPP cellular Vehicle-to-Everything (V2X) standards, and discusses potential applications, level of automation, spectrum usage, service architecture, security and privacy.

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

EDITORIAL CORRESPONDENCE

Address to: Prof. Eyal de Lara, 40 St. George Street, Suite 4283, Department of Computer Science, University of Toronto, Toronto, Ontario M5S2E4, Canada, Email: getmobile_editor@acm.org. For specific department email addresses, see the "Call for Contributions" on page 59.

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