Panel: Indoor Localization - Ready for Primetime?

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ABSTRACT

Indoor navigation and location tracking have been popular academic research topics in our community for more than a decade. This has lead to a vast amount of theoretical results, positioning techniques, and system prototypes that were developed in academia and industry research labs for efficient and accurate indoor localization and navigation. Marketplace adoption, however, has been slow—products have largely focused on outdoor positioning and navigation. Only recently has the industry buzz and investment in indoor positioning and navigation products picked up.

This panel will discuss whether indoor positioning solutions are finally ready for the marketplace. It will examine the limitations of the state of the art along dimensions such as precision, accuracy, energy consumption, complexity, and privacy and will debate in which areas, if any, further academic research is called for. The panelists will also discuss why adoption has been slow, whether any significant non-technical hurdles remain, and speculate which technical solutions are most likely to succeed.

Categories and Subject Descriptors

C.2 [**Computer-Communicatino Networks**]: Miscellaneous

Keywords

Indoor Positioning, Localization

Panelists

To address this topic, this panel brings together experts in indoor location from industry research and academia. The panelists and their biographies follow.

Prof. Romit Roy Choudhury.

Romit Roy Choudhury is an Associate Professor of ECE at the University of Illinois at Urbana Champaign (UIUC). He joined UIUC from 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 protocol design mainly at the PHY/MAC layer, and in mobile computing at the application layer. Along with his students, he received a few research awards, including the NSF CAREER Award, the Google Faculty Award, best paper at Personal Wireless Communications conference, Hoffmann Krippner Award for Engineering Innovations, etc. Visit Romit's Systems Networking Research Group (SyNRG), at http://synrg.ee.duke.edu

Prof. Moustafa Youssef.

He is an Associate Professor at Egypt-Japan University of Science and Technology and Alexandria University. He has been working on location determination systems, including the Horus indoor localization system, PinPoint system, Nuzzer system, CellSense cellular localization system, systems for localization in sensor and ad hoc networks, among others. He has tens of papers in the world's most prestigious journals and conferences with thousands of citations on Google Scholar as well as ten issued and pending patents. Prof. Youssef is the recipient of the 2004 Invention of the Year award from the University of Maryland for his work in the Horus Location Determination System, the 2010 joint TWAS-AAS-Microsoft Award, the 2012 Egyptian State Award for Engineering Sciences, among others.

Dr. Ravi Palanki.

He is with Qualcomm Research Silicon Valley, where he leads a team of engineers working on indoor positioning algorithms. He received his B.Tech. in EE from IIT Madras in 2000, and M.S. and Ph.D. in EE from Caltech in 2001 and 2004 respectively. During the course of his Ph.D., he was also a visiting researcher at NASA's Jet Propulsion Laboratory (JPL) and Mitsubishi Electric Research Labs (MERL), and has been with Qualcomm Corporate R&D subsequently. Dr. Palanki was a key member of the team that designed OFDMA-based wireless technologies and was responsible for the design and standardization of several key features for Long Term Evolution (LTE), the predominant 4G technology in the world. His research interests include wireless communications, information theory and probabilistic inference, and he has around 20 journal/conference papers and 200 approved/pending patents in these areas.

Dr. Jie Liu.

He is a Principal Researcher and a Research Manager at Microsoft Research, leading the Sensing and Energy Re-

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search Group (SERG). His group conducts fundamental and systems research on sensing and energy-efficient computing. Before joining MSR in May 2004, he was a researcher at Palo Alto Research Center (formerly Xerox PARC). Since 2008, he also holds an adjunct professorship (Foreign PhD Advisor) at Harbin Institute of Technology, China. He received his Ph.D. degree from EECS, UC Berkeley in 2001 and his Master (1996) and Bachelor (1993) degrees from the Department of Automation, Tsinghua University, Beijing, China. He is a Distinguished Scientist of the ACM since 2011, has received the Exceptional Student Award from Tsinghua University (the highest student award) in 1996, the Leon O. Chua Award for outstanding research from UC Berkeley in 2001, the Technology Advance Award from PARC in 2003, and the Gold Star Award from Microsoft in 2008. He has also received, with co-authors, Best Paper Awards from RTAS 2010 and SenSys 2012.