

T5. Recent Advances in Wireless Localization

Abstract:

In this tutorial, we provide an overview for the recent advances in wireless localization, in particular from the physical-layer perspective of theory and algorithm design. Starting from the basic models and concepts of wireless localization, we overview the state-of-the-art results on cooperative network localization and array-based network localization. Then, we introduce network operation techniques for efficient wireless localization in both noncooperative and cooperative scenarios. A typical example is then discussed to preserve location privacy using proper power allocation strategies. High accuracy and efficient vehicle localization methods are also discussed. Finally, we introduce the recent advances in PHY-layer security in wireless localization.

Speaker's Biography:

Yuan Shen, Tsinghua University



Yuan Shen (M'14) received the B.E. degree in EE from Tsinghua University in 2005 and the S.M. and Ph.D. degrees in EECS from MIT in 2008 and 2014, respectively. He is an Associate Professor at the Department of Electronic Engineering, Tsinghua University. His current research focuses on network localization and navigation, inference techniques, resource allocation, and multi-agent systems. He was a recipient of the Qiu Shi Outstanding Young Scholar Award, the China's Youth 1000-Talent Program, the Marconi Society Paul Baran Young Scholar Award, and the MIT Walter A. Rosenblith Presidential Fellowship. His papers received the IEEE ComSoc Fred W. Ellersick Prize and three Best Paper Awards from IEEE international conferences. He is an elected Vice Chair (2017-2018) and Secretary (2015-2016) for the IEEE ComSoc Radio Communications Committee. He serves as TPC symposium Co-Chair for the IEEE Globecom (2016, 2018), the EUSIPCO 2016, and the IEEE ICC ANLN Workshop (2016, 2017, 2018). He also serves as Editor for the IEEE Transactions on Wireless Communications (since 2018), IEEE Wireless Communications Letters (since 2018), and IEEE China Communications (since 2017), IEEE Communications Letters (2015-2018), and served as Guest Editor for the International Journal of Distributed Sensor Networks (2015).

Guodong Zhao, Univ. of Electronic Sci. and Tech. of China



Guodong Zhao (SM'16) received his Ph.D. Degree from Beihang University, Beijing, China, in 2011 and his B.E. degree from Xidian University, Xi'an, China, in 2005. He visited the Hong Kong University of Science and Technology, Hong Kong, in 2012.5-2013.8, Lehigh University, USA, in 2016.7-2017.1, and University of Glasgow, UK, in 2017.10-2017.11. He is now an associate professor at University of Electronic Science and Technology of China (UESTC) and an honorary lecturer at University of Glasgow. His current research interests are within the areas of wireless communications and control. He published over 50+ papers in IEEE journals and conferences. In 2012, he received the best paper award from IEEE Global

Telecommunication Conference (Globecom) and the best Ph.D. thesis award from Beihang University.

Tingting Zhang, Harbin Institute of Technology, Shenzhen



Tingting Zhang (M'12) received the B.S. (with honors) and Ph.D. degrees in electronic engineering from Harbin Institute of Technology (HIT), Harbin, China, in 2003 and 2009, respectively. He is currently an Associate Professor and Ph. D advisor with HIT Shenzhen, Shenzhen, China. In 2009 to 2012 he was a postdoctoral research fellow with the Communication Engineering Research Center, HIT Shenzhen. In 2012 to 2014, he was with the Department of Electronic Engineering, University of Southern California, Los Angeles, CA, USA, as a visiting scholar.

His current research interests include network localization, vehicular communications, navigation and intelligent transportation, etc. Dr. Zhang serves as the TPC member for several international conferences, such as ICC, GLOBECOM, ICC2018, and VTC. He is also the reviewer of numerous academic journals, such as IEEE JSAC, TWC, TVT, etc. He is a Senior Member of China Institute of Communications (CIC). He received the Outstanding Postdoctoral Award of HIT, Shenzhen Graduate School in 2011. He also received Shenzhen High Level Talent Program award in 2012.