**Title:** Pushing the Limits of Indoor Localization in Today's Wi-Fi Networks

**Abstract**

WiFi is ubiquitous nowadays and is playing an increasingly important role in our everyday lives. Traditionally, WiFi networks are mainly used for data communication. In recent years, WiFi signals have been exploited for many exciting new applications including wireless health, elderly/patient monitoring, indoor navigation, gesture recognition, etc. One key component for the success of these applications is accurate tracking of movements. While GPS has achieved a great success in the outdoor environment, indoor tracking at a sub-meter granularity remains challenging due to a number of factors, including the presence of strong multipath reflections and the burden of deploying and maintaining additional tracking service infrastructure. The recent trend of dramatically increasing number of antennas and larger bandwidths at the WiFi access point, brings us unique opportunities to achieve fine-grained tracking performance. Two systems will be introduced in this talk. The first, ArrayTrack, is the first tracking system hosted on Wi-Fi infrastructure to achieve an accuracy below 30 cm. ToneTrack is another system, which breaks the bandwidth limit for time-based localization by combining information from adjacent channels.

**About the speaker:**

Jie Xiong is an Assistant Professor in School of Information Systems at Singapore Management University. He received the Ph.D from the Department of Computer Science, University College London, in 2015. He was awarded the prestigious Google European Doctoral Fellowship in Wireless Networking for his doctoral studies. His Ph.D thesis won the 2016 British Computer Society Distinguished Dissertation Award runner-up. He has broad research interests in building practical wireless and mobile systems that bridge the gaps between theory and reality. His recent work appears at INFOCOM '17, MobiCom '16, CoNEXT '16, UbiComp '16, MobiCom '15, CoNEXT '14 (Best Paper Award), MobiCom '14, MobiCom ’13 and NSDI '13. He received the M.Sc. and B.Eng. degrees from Duke University and Nanyang Technological University respectively.