UCF DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCEINCE

Fall 2014 Seminar Series
Presented by the CS Division

FAST AND EFFICIENT FINGERPRINT-BASED LOCALIZATION AND TRACKING

MONDAY NOVEMBER 3, 2014

1:00 PM – HEC 450

Location fingerprint is a common approach to GPS-less localization. In this approach, for good accuracy, the training set of sample fingerprints should be sufficiently large to be well-representative of the environment in terms of both spatial coverage and temporal coverage. As such, the computation required during the positioning phase can be expensive because we have to evaluate each new fingerprint against the training data repeatedly over time. It is desirable, therefore, to optimize computational efficiency, not just localization accuracy. Existing techniques are far from this goal due to their polarization toward only one criterion. This talk introduces our recent findings summarized into two parts: (1) given a fixed set of sample fingerprints obtained offline, using spatially hierarchical learning and graph regularization methods to improve both accuracy and efficiency, and (2) given no sample fingerprint in advance, using online learning methods to localize and track mobile devices in real time as sample fingerprints are obtained in a stream manner. The proposed research's goal is to result in localization and tracking solutions that are low-cost, yet fast and accurate.

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Dr. Duc A. Tran is an Associate Professor of CS @ UMASS Boston. He has published about 70 conference/journal papers in the areas of networks and distributed data. His research work has led to funding awards from the NSF, Best Paper Award at ICCCN 2008, and Best Paper Recognition at DaWak 1999. His professional activities include serving as a several-time NSF Review Panelist, Editor for Journal on Computational Social Networks (2013 - date), Editor for Journal on Parallel, Emergent, and Distributed Systems (2010-date), Guest-Editor for Journal on Pervasive Computing and Communications (2009), TPC Chair/Co-Chair for WiMAN 2014, CCNet (2010, 2011), GridPeer (2009, 2010, 2011), and IRSN 2009, TPC Vice-Chair for AINA 2007, TPC Chair for VTC-Fall 2015 (Track Ad hoc and Sensor Networks), Organizing Committee member for 2014 ACM Multimedia Conference, and a keynote speaker at WiMAN 2013. Dr. Tran obtained his Ph.D. degree in CS from the University of Central Florida in 2003.

Hosted by: Dr. Kien Hua

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