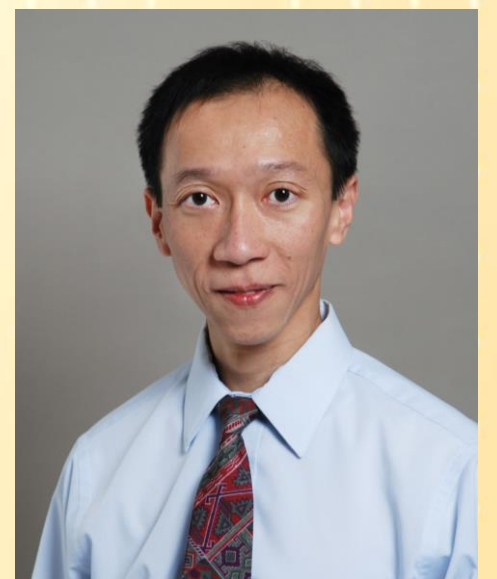


Reaching Asymptotically Efficient Localization Performance Using Squared Measurements in Sensor Networks

by

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Date: 19 August 2014 (Tuesday)

Time: 10:30 a.m. – 12noon

Venue: Room 222, Ho Sin Hang Engineering Building, CUHK

Abstract

Localization of an emitting source is a challenging non-linear estimation problem. Exact explicit solution exists by squaring the TOA or TDOA measurements when solving for the location. The squaring operation changes the statistical properties of the measurements and the resulting solution does not reach the CRLB performance and can be quite inaccurate. This talk develops a modified cost function of the squared measurements whose minimum will achieve the CRLB accuracy for Gaussian noise asymptotically. We validate our claim through theoretical analysis and simulation studies. The modified cost function maintains the benefit in which exact solution can be derived. Performance of the developed technique for successive localization of sensor nodes and for acoustic source localization using a network of smart phones will be illustrated.

Biography of the Speaker

Dr. Ho is a Professor at the University of Missouri, USA. He received his BSc degree in 1988 and the PhD degree in 1991, both from the Electronic Engineering Department of the Chinese University of Hong Kong. Dr. Ho was a research associate in the Royal Military College of Canada and a scientific staff of the Nortel Networks before joining the Univ. of Missouri. He was very active in the ITU standard developments from 1995 to 2013. He has made over 70 contributions to ITU and was the editors of several standard recommendations. He has served as an Associate Editor of the IEEE Signal Processing Letters and the IEEE Transactions on Signal Processing. He is currently the Chair of the IEEE Sensor Array and Multichannel Technical Committee of the IEEE Signal Processing Society. He has published over 200 papers and is an inventor of 20 patents. Dr. Ho is a fellow of the IEEE.

ALL ARE WELCOME

** Light refreshment will be served at 10am before the lecture **