

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
UNIVERSITY OF SOUTHERN DENMARK, ODENSE

COMPUTER SCIENCE COLLOQUIUM

Infrastructure-free Floor Localization via Mobile Phone Sensing

Tao Gu

Department of Mathematics and Computer Science
University of Southern Denmark, Denmark

Monday, 21 May, 2012 at 10:30

Auditorium U49D

Abstract:

Mobile phone localization plays a key role in the fast-growing Location Based Applications domain. Most of the existing localization schemes rely on infrastructure support such as GSM, WiFi or GPS. In this talk, I will present our recent work on floor localization via mobile phone sensing, named FTrack. FTrack uses the mobile phone's accelerometer only without any infrastructure support. It does not require any prior knowledge of the building such as floor height. By capturing user encounters and analyzing user trails, FTrack finds the mapping from the traveling time (when taking the elevator) or the step counts (when walking on the stairs) between any two floors to the number of floor levels. The mapping can then be used for mobile users to pinpoint their current floor levels. We conduct both simulation and field studies to demonstrate the effectiveness of FTrack. Our field trial in a 10-floor building shows that FTrack achieves an accuracy of over 90% after two hours in our experiment.

Host: Martin Svensson