ARIZONA STATE UNIVERSITY

TRANSPORTATION ENGINEERING SEMINAR

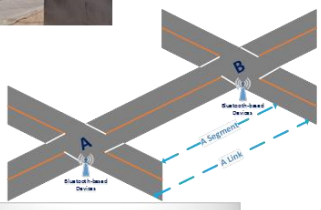
Arterial Performance Measurement Using Low-Cost Bluetooth Sensors

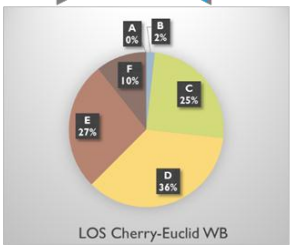
Friday, March 6, 2015
3:00pm to 4:30pm

Please join us in Schwada Building (SCOB) room 101

Yao-Jan Wu, Ph.D., P.E.

Assistant Professor, University of Arizona





Travel time is one of the major freeway and arterial performance measures. Bluetooth technology is an emerging approach to collecting travel time data. The City of Tucson, Arizona, and the Pima Association of Governments (PAG) wishes to use the Bluetooth technology to collect speed and travel time data on multiple arterial corridors for large scale traffic operations and dynamic traffic modeling. According to their research needs and literature review, three major challenges that have been identified and solved in this study are: 1) Low-cost Bluetooth sensors were successfully developed and 37 of them were deployed on major arterials in Tucson; (2) the data collection system can run 24/7 with high system reliability; (3) a data imputation method was developed to increase the same size Bluetooth-based travel time raw data. In addition, the proposed travel time estimation method was validated with the ground truth data collected by the probe vehicle technique. More than one month of the Bluetooth data was processed and converted into useful performance measures, demonstrating the proposed system can effectively, accurately and efficiently process and present a large amount of Bluetooth-based travel time data for arterial performance measurement.

Dr. Yao-Jan Wu is an assistant professor of transportation engineering in the Department of Civil Engineering and Engineering Mechanics at the University of Arizona (UA) and the faculty adviser of the UA Institute of Transportation Engineers (ITE) student chapter. Yao was awarded Professor of the Year in the Department of Civil Engineering and Engineering Mechanics department at the UA in 2013. His research broadly covers four major fields: 1) traffic safety, 2) intelligent transportation systems, 3) large-scale network analyses and 4) sustainable transportation systems.

http://goo.gl/A9e8aq

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