

Mining Passenger Flow Patterns and Station Relationships in Urban Metro System

Abstract

Metro (a.k.a. subway) systems play an important role in meeting the urban transportation demand in large cities. Mining passenger flow data of a metro system can help understand the commuter travel patterns, analyze station functionalities, and forecast crowdedness. In this talk, we present a framework for 1) modeling of passenger flow patterns and feature extraction, where a sparse non-negative multivariate functional data decomposition is proposed to describe the dependence structure of passenger flows of different origin-destination pairs in a metro system; 2) station clustering and sub-region identification, where based on the extracted features, a multi-dimensional network is conducted for representing the dependence structure of different stations. And a community detection algorithm is proposed for identifying different sub-regions and station functionalities.

Speaker



Dr. Chen Zhang

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Dr. Zhang Chen is an Assistant Professor in Industrial Engineering, Tsinghua University. Before joining Tsinghua, she was a research fellow of School of Information Systems, Singapore Management University. Dr. Zhang received her Ph.D. degree from National University of Singapore in 2017, and her B.Eng. degree from Tianjin University in 2012. Her research interests include developing methodologies and algorithms for complex or large-scale systems with multivariate or high-dimensional data, including intelligent sampling and sensing for data collection, data mining and information extraction for system modeling, and on-line monitoring and efficient anomaly detection for streaming data.

Details

Monday, October 7, 2019
11:00 AM - 12:00 PM

Seminar Room 2.2, Level 2 SIS

School of Information Systems, Singapore Management University, 80

Stamford Road, Singapore 178902, Singapore

We look forward to seeing you at this research seminar.

Register

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