

TRANSPORTATION ENGINEERING SEMINAR

**Forecasting Occupancies in Urban Networks with
Volume-weighted adaptive LAD LASSO**

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

Please join us in College Avenue Commons, Room 425

Yiannis Kamarianakis

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Traffic Control Centers (TCCs) monitor road traffic in urban road networks using sensors that report (typically every 5 minutes) at least two variables: traffic volume and road occupancy. TCCs identify congestion by threshold exceedances for the levels of occupancies and require accurate short-term forecasts (from 5 minutes up to 1 hour) in order to assess whether congestion mitigation actions (eg modified signal plans) should be performed. This work develops parametric time series models that take into account varying costs of forecasting errors, with costs depending on the levels of traffic volumes. The models account for space-time dependencies, cross-correlations of traffic variables and regime-switching dynamics; parameter estimation is performed with weighted adaptive LAD LASSO. Forecasting accuracy of the proposed models versus ARIMA and 3 naïve estimators is evaluated using data from the TRB traffic forecasting competition.



Dr. Yiannis Kamarianakis is an Assistant Professor in SoMSS. His research interests focus on statistical models for network flows and environmental space-time processes. Previously, Dr Kamarianakis was a postdoc at Cornell and a researcher at IBM Watson Research Center where he worked on the development of IBM's traffic prediction tool. In 2013, he received the best paper award in the TRB Transportation Forecasting Competition.



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