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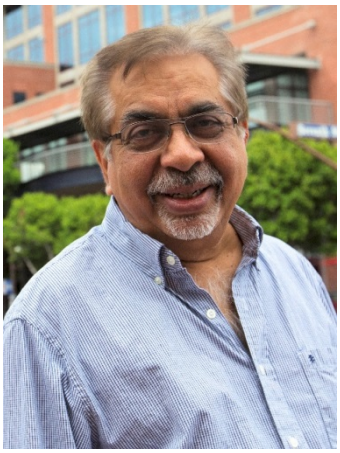
Friday, February 19, 2016
10:00 – 11:00 am
Seminar Room 4080 AIR Building

MIDAS-CPS – THE POSSIBLE FUTURE OF PROACTIVE TRAFFIC



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Abstract

While driving on your favorite route to your destination, have you ever wondered why the technology you are seeing as far as traffic management is concerned is so antiquated? My answer to that is the people and organization that manage the traffic are not "cyber-physicists" nor "real-time optimizers". MIDAS hopes to demonstrate the synergistic use of a cyber-physical infrastructure consisting of smart-phone type devices; cloud computing, wireless communication, and intelligent transportation systems to manage vehicles in the complex urban network – through the use of traffic controls, route advisories and road pricing/rewards – to jointly optimize drivers' mobility as well as achieve the sustainability goals of reducing energy usage and improving air quality. A key element of MIDAS-CPS is the real-time streaming data collection and data analysis and the subsequent traffic management through proactive traffic controls and advisories, through visualizations of predicted queues ahead, effective road prices/rewards, and route advisories. Although drivers will not be forced to use recommended routes, it is anticipated that MIDAS-CPS would lead to lesser drive stress and improved road safety, besides the designed benefits on the environment, energy consumption, congestion mitigation, and driver mobility. This talk will only focus on overall architecture of MIDAS and on the proactive traffic management component, while the sponsored multidisciplinary NSF project is at the cutting edge in several areas: real-time image processing, real-time traffic prediction and supply/demand management, and data processing/management through cloud computing.

Dr. Pitu B. Mirchandani [BS/MS degrees in Engineering, UCLA; S.M/ScD. Degrees, Operations Research, MIT] is a Professor of Computing, Informatics, and Decision Systems Engineering at Arizona State University (ASU) where he holds the AVNET Chair for Supply Chain Networks. Pitu Mirchandani has been studying Dynamic Stochastic Networks for close to 40 years, with interests in models and systems for making strategic/tactical/operational decisions in dynamic and stochastic networked environments. Mirchandani's contributions are in: (1) Location Decision Modeling, (2) Traveler and Vehicle Routing Models, (3) Real-time Data-Driven Decision Systems, and (4) general theoretical contributions to OR modeling, methods and algorithms.

Professor Mirchandani has authored/co-authored four books and approximately 200 articles, and he has been a principal investigator on many research programs. Dr. Mirchandani is a lifetime member of IEEE and a Fellow of INFORMS.