

Department of
Systems & Industrial
Engineering

Fall 2006
Seminar Series

2 PM, Thursday,
November 2, 2006



Engineering Building
Room 301

<http://www.sie.arizona.edu/events/seminars.html>

Sponsored by:
The Dept. of Systems & Industrial Engineering

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Urban Gridlock Mitigation and Other Ideas to Improve Future Urban Transport

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Abstract:

This talk will describe an adaptive control approach to improve urban mobility and relieve city congestion. The basic idea consists in monitoring and controlling aggregate vehicular accumulations at the neighborhood level. To do this, a physical model of the gridlock phenomenon will be presented, including an interactive animation that illustrates the ideas. The mathematical model is dynamic, aggregate and only requires observable inputs at the neighborhood level. Therefore, it can be used for adaptive control with reasonable data needs. Simulations suggest the results of the procedure are sufficiently accurate for practical application. Pareto-efficient strategies are shown to exist for the single-neighborhood case, and optimality principles are introduced for multi-neighborhood systems. The principles can be used without knowing the origin-destination table or the precise system dynamics.

The talk will also describe, albeit more briefly, other ideas currently under investigation at the U.C. Berkeley Center of Excellence for Future Urban Transport: <http://www.its.berkeley.edu/volvo-center/>