

**Program in Industrial & Systems Engineering
IE 8773-8774**

Title: Map Segmentation Algorithms and their Applications

by

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Wednesday, October 7, 2009

3:15 PM – Refreshments before the seminar

3:30 PM – Graduate Seminar

Room 4125 A & B Mechanical Engineering

Abstract:

Dividing a given geographic region into pieces is a problem that arises in many contexts, such as congressional redistricting, sales segmentation, and air traffic control. These also include problems that do not look like such initially, such as dividing a region among a set of vehicles in order to perform surveillance or to perform service among various customer locations. Often, some ways of dividing the region are better than others along one or more criteria. Current approaches to many of these problems involve first discretizing them and then solving the resulting large integer programs. We find that certain problems, when properly formulated, can be solved efficiently using "map segmentation" algorithms. Here we describe two algorithms for optimally partitioning a geographic map, motivated by a stochastic multi-depot vehicle routing problem.

Bio: John Gunnar Carlsson is an assistant professor in the Industrial and Systems Engineering program at the Twin Cities campus of the University of Minnesota. He received a PhD in computational mathematics from Stanford University in 2009 and an AB in mathematics and music from Harvard University in 2005. His research interests include optimization, transportation science, and computational geometry.