The University of Alabama
Department of Computer Science
Colloquium Series Speaker

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Planning and Monitoring Patrol Routes

Friday, November 2nd
11:00 a.m., HO 108

Abstract:

This presentation describes methods for planning and monitoring patrol routes in order to maximize coverage of important locations (hot spots), minimize cost (length of routes), and enable quick response to changing conditions. It outlines metrics for evaluating the output of such methods and describes an implementation of a map-matching and planning system. The presentation addresses two tasks in particular:

- The first task is that of optimizing planned patrol routes given a road network and a weighted list of hot spots to be monitored. The output is a list of routes that maximize the benefit of patrols subject to the constraints. In addition to the weights of hot spots, these routes are affected by the topology of the road network. The solution permits automation of a labor-intensive stage of the patrol-planning process and aids dynamic adjustment of patrol routes in response to changes in the input graph.

- The second task is that of determining the path of a vehicle on a given vector map of roads, based on tracking data from onboard GPS receivers and similar sources. Here too, the task is complicated by the topological constraints of the road network. The solution is based on a piecewise matching of track segments to map features. A notable feature of this solution is that it can improve the performance of a large class of existing methods for map matching.

Dr. Chawathe's Bio:

Sudarshan S. Chawathe serves as Assistant Professor of Computer Science at the University of Maine. He received the M.S. and Ph.D. degrees in Computer Science from Stanford University, and the B.Tech. degree in Computer Science and Engineering from the Indian Institute of Technology (IIT), Kanpur. He is the recipient of the President's Gold Medal from IIT Kanpur and a CAREER award from National Science Foundation. His research interests include semi-structured databases, information integration, streaming query processing, data mining, differencing, change management, XML and the Web, intelligent transportation systems, service-oriented architectures, and peer-to-peer systems.

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