

Using Information Technology to Reduce Traffic Jam in a Highly Traffic Congested City

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We propose a cost effective and practical model to reduce traffic jam in a highly congested city, using four approaches:

- Simulation
- Sensor Networks
- Real-Time Website Based Management
- Data Mining Approach

Simulation

Steps using this approach:

- Define a simulation model
 - Parameter distribution
 - Experimental design
- Define output variables
- Run simulations
- Analyze simulation output
- Find an optimal schedule for the vehicles

Sensor Networks

Steps using this approach:

- Recommend hardware/software platform
- Identify a solution for:
 - Vehicle detection
 - Sensor deployment
 - Power saving
- Topology of the network over the city
- Detecting jammed and free areas
- Determine how to use sensor data to reduce a traffic jam

Real Time Website Management

- Integrated with sensor network
- Shows schedules of all vehicles
- Shows current traffic status
- Provides congestion free shortest path

Data Mining

- Analyze sensor data to re-schedule vehicles
 - Find causes and characteristics of a traffic jam
 - Use cluster data mining
 - Use classification data mining
 - Use data mining software
- Incident Management
- Traffic signal timing plans
 - Hierarchical cluster data mining

Work in Progress

- Develop a simulation software
- Develop a prototype sensor network
- Develop a real-time web site
- Apply data mining techniques to the data collected from the prototype system
- Analyze socio-economic factors, including the influence of the system to people
- A technical and financial feasibility study