Statistical Modeling and Prediction of Users' Behavior from Time Series Sensor Data

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Project Description: Given a time series sensor data of a user or a group of user, develop statistical modeling algorithms to model the behavior of the users and extract significant patterns in the dataset. Use the inferred model to predict the future behavior of the timeseries while considering various internal and external factors that can be sensed through various sensors.

Application: Predicting the waiting time at offices of the Department of Motor Vehicles (DMV) based on models trained from historical data. Questions to be answered include:
1) What is the best time in the week to go to DMV?
2) Given a location of the user and the current time, which DMV should the user go to?

Dataset: Waiting time (number of minutes a person has to wait in a queue) at each DMV office sampled every 10 minutes for the past 3 months.

Proposed approaches: Parametric models, Dynamic Bayesian Network, Linear Regression, SVM

Timeline: This project expects 12 hours/week for Spring 2013 semester.

Deliverabels: Monthly project reports due at the end of each month; Final report in the format of a conference paper.