**Abstract**:

Short-term traffic prediction is a

With the expansion of metropolises and the high demand of vehicles, improving the

capacity of road networks is no longer simply planning more roads and more lanes.

Besides, the increasing number of roads is unavoidably raising the complexity of

road networks which bring difficulty in monitoring and maintaining the traffic

environment. Under that urgent demand, the Intelligent Transportation System

(ITS) attracted increasing attention and developed fast in recent years. Among this

gigantic system, short term traffic prediction is a vital branch, especially in real-time

route guidance. In this project, our goal is to propose a robust and accurate

machine-learning based model for short-term traffic prediction.

This work's data for training is obtained from the PeMS, which shows recorded traffic flow data for the Freeway SR52-E in District 11 (San Diego) for the past few years. In this project, the Gradient Boosting Decision Tree (GBDT), a popular machine learning algorithm in classification and regression field and needs to scan all the data instances to estimate the information gain of all possible split points [1], would be used as Liu [2] did. In this case, the SR52-E connects the University City to the other area, so the prediction of VMT could be used to estimate the rough lane occupancy, which might provide the information to help to schedule the maintenance plan.