Abstract

The main focus of this project is to research and analyze the relationship between some potential factors (weather, school events, etc.) and traffic count around UMD campus. Based on the initial explorations, a traffic count predictive model is built for future traffic prediction and resource allocation.

Data source:

- A dataset provided by DOTS records the traffic count of 5 different modes from 5 locations around the campus .
- Hourly and daily weather condition details are provided by the National Oceanic and Atmospheric Administration(NOAA).
- School events information is collected from University of Maryland event websites: https://homecoming.umd.edu/ and https://umterps.com/sports/mens-basketball/schedule/2019-20
- Road features captured from the google map.

Method:

- Line Plot for time vs. traffic counts to see the relationship between those two variables.
- Linear regression model between traffic counts and other variables(weather condition, temperature, time, events, road features, weekday etc.) which can dig deeper into the key factors to the traffic count. Moreover, it provides quantitative details about how much influence they have on traffic.
- A predictive model based on linear regression model to predict the traffic count for different time, location and mode.

From the line plot, there is a clear pattern between time and the traffic count. The traffic count usually increases rapidly around 9 am which is the rush hour, and maintains at a high level during the whole day until 7 pm at the end of the working hour. In addition, there are some variations in pattern between each mode and location. By building the regression model, it is found that time and event are the two major factors leading to the high traffic counts. Weather does not affect traffic a lot according to the model. Since the dataset only covers two weeks' record with almost no rain, it is hard to discover the weather condition's influence on the traffic count. We assume that by feeding more data into the model, this factor may show more effect on the traffic count.