Practical AI Term Project

Pitt Parking Pal

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Datasets

We have selected three datasets from the Western Pennsylvania Regional Datacenter.

Aggregated Parking Transactions

Link: https://data.wprdc.org/dataset/parking-transactions

This dataset is a frequently updated aggregation of transaction data for parking payments in Pittsburgh. It is updated multiple times per hour and includes information such as parking start and end times, the meter that the parking was paid for, and the dollar amount of the parking transaction. We will use this data to train our model to find the best place to park in Pittsburgh.

Pittsburgh Parking Meters and Payment Points

Link: https://data.wprdc.org/dataset/pittsburgh-parking-meters-and-payment-points

This dataset contains information about parking locations controlled by the Pittsburgh Parking Authority. It includes the parking rate information, locations, zones, hourly parking restrictions, and more. We will use this information to help our application determine parking areas near the user and any restrictions in place.

Street Sweeping Routes

Link: https://data.wprdc.org/dataset/street-sweeping-routes

This data set contains all of the street sweeping routes in Pittsburgh. We will utilize this to prevent the application from suggesting a location to park if there is street cleaning at the time the user would like to park.

Models and Predictions

We want to use the transaction data to predict the location of the most available parking spaces given time, day, and location. As of writing this document, there are almost 1.44 million entries in this data set, which should be more than enough points to achieve a good model for our application. Since the data is updated so frequently, we can use newly generated data to verify previous predictions.

Application

We envision a web application that helps users plan where to park. For example, if I have a class at Cathy 3:00 PM on Tuesdays, this application can visualize places within walking distance that have the highest probability of having available parking. Another example could be moving into an apartment on a particular day. I would need to park pretty close by, so perhaps I'd want to test a few different times throughout the day to see when parking spaces are typically available in front of my apartment and choose the best time to move in. The application could also remind users of things like street cleaning days and suggest another location to park during that time to avoid a parking ticket.

Goals

Success Criteria

- Model makes a prediction of open parking spots
- Application visualizes locations most likely to have parking
- Parking events and reminders

Stretch Goals

- Cost prediction/optimization for parking transactions
- Native mobile application with push notifications and GPS location service

Timeline

Milestone	**Goal**
1 - September 21, 2020	- Preliminary results on trained model
2 - October 19, 2020	- Integrated model into application with other data sources - Website or mobile demonstration
3 - November 11, 2020	- Full application and visualizations complete with fully trained model - Show that our predictions actually provided available parking spaces using updated data from the next day