Overview statement and requirements

Team #5:

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Project Purpose:

We built a Uber-like rider-side Web App, which enables riders to order a trip nearby, also we trained a ML model to predict the estimated cost of the trip.

Functionalities and features:

The rider can register, login in our website

The rider can request a trip, and can also choose his/her favorite car model

The system will match the nearest car with the rider, and calculate the estimated cost of the trip via trained ML model

The rider can choose if he wants to add a tip to the driver

The rider can get all revanlent info when the trip completed

The rider can write reviews and rate the driver after the trip

The rider can view his/her trip history and all reviews

ML Description:

Data source and preparation:

--Taxi_Trips.csv from Chicago Data Portal (size: 100k)

--Using numpy and pandas library, deal with missing values, further narrow down the dataset to a specific range, then usable dataset size shrinks to 32k+

--Using StandardScaler from scikit-learn library to normalize and transform the training data

Exploratory data analysis:

--Using seaborn, matplotlib library to plot the correlation and heatmap between features and target value. Based on the plots and heatmap, we can conclude that Trip Miles and Trip Seconds has strongest correlation with Trip total

Feature engineering, train-test splitting, model selection, training, evaluation and prediction

-- Select 'Trip Seconds' and 'Trip Miles' as training features based on EDA above

-- Split the data into training set and test set

-- Choose among Decision Tree model, RandomForest model and Multi-linear Regression model, after evaluating their MSE and accuracy, we finally chose the Multi-linear Regression model
-- Get the correspondent coefficients from the linear model, we predict a random generated trip, and get similar estimated price to Uber App

Tech:
Google Map Directions API
Google Map Distance Matrix API
Google Map Geocoding API
Google Map JavaScript API
Google Map Static API
HTML
CSS
Javascript
Bootstrap
Java Servlet
Mysql Database
MongoDB Database
Python
ML
Numpy
Pandas
Matplotlib
Seaborn
Scipy
Sklearn