Bike Sharing Demand Prediction for Los Angeles

CSE 258 Assignment 2

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ABSTRACT

In this project, a model that predicts the total ride duration of taxi trips in New York City is built. The patterns related to the geographical locations and pick-up and pick-off time with passenger businesses are observed and evaluated. We utilize the dataset released by the NYC Taxi and Limousine Commision, which provides the necessary information to accomplish our goal[1]. We manipulated and mined the dataset by multiple models we learned from CSE 258 course taught by Prof.Julian McAuley and the further reading materials. [MODELS MODELS MODELS] [RESULTS RESULTS RESULTS] Predicting fare[??] and duration of a ride can help passengers decide when to start a commute and help drivers decide an optimal ride. Our model can be used to give an estimated fare and duration prediction.

KEYWORDS

Give me FIVE!!!!!!

1 INTRODUCTION

Bike shares are riding a wave of popularity in the intermodal transit planning community. Through bike sharing systems in a city, people are able to rent a bike from a one location and return it to a different place on an as-needed basis. The number of bike share systems, defined as publicly-available systems with at least 10 stations and 100 bikes, has steadily increased year-over-year, from four systems in 2010 to 55 systems in 2016 across U.S, with over 42,000 bikes available in cities of all sizes. In addition, 80% of systems that have been in operation for more than a year have expanded since they launched. 2016 saw the launch of two large systems in major cities: BIKETOWN in Portland, OR and Metro Bike Share[1] in Los Angeles, CA. The number of bikes in the nation also increased substantially, up 30%, as existing large systems have continued to grow.

The growth of bike share shows no signs of stopping. A number of U.S. cities, such as Detroit, New Haven, and New Orleans, have either selected vendors or are planning to launch systems, and many existing systems are also rolling out major expansions. : New York's City Bike is adding another 2,000 bikes, for a total of 12,000; Houston is more than tripling in size to over 100 stations; and the San Francisco Bay Area is expanding from a 700 to a 7,000 bike system. Here in our assignment, we conduct a case study based on the bike sharing data on the Metro Bike Share System in Los Angeles. We try to forecast the bike sharing demand to help design and expand the bike sharing system in LA.

The data generated by these systems makes them attractive for researchers because the duration of travel, departure location, arrival location, and time elapsed is explicitly recorded. Bike sharing systems therefore function as a sensor network, which can be used for studying mobility in a city. In this competition, participants are asked to combine historical usage patterns with weather data in order to forecast bike rental demand in the Capital Bikeshare program in Washington, D.C.

In our analysis, what did we learned from? // We reviewed... discussed...

Our three/four/five models and brief description. [name and principles.] We evaluate based on RMSE..... We also discuss...

2 DATA

Describe the dataset.

3 PREDICTIVE TASK

4 MODELS AND METHODOLOGY

5 LITERATURE

6 RESULTS AND CONCLUSIONS

REFERENCES

[1] [n. d.]. *Metro Bike Share system in Los Angeles.* https://bikeshare.metro.net/how-it-works/.

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[1]The primary dataset is based on the 2016 NYC Yellow Cab trip record data made available in Big Query on Google Cloud Platform. It was originally published by the NYC Taxi and Limousine Commission (TLC). It was sampled and cleaned for this course project. It includes pickup time, geo-coordinates, number of passengers, and several other variables from all trips completed in Yellow and Green taxis in NYC from 2009 to present.