

APAN5400

Group 10: Xu Feng, Xuefan Han, Hangyu Li, Xuchang Liu, Sherry Xu

Dr. Nikolaos Machairas

May 01, 2022

Term Project Implementation - 311 Service Request Locator

The Python implementation that demonstrates the designed system is centralized in the routes.py file under the “app” folder in our submitted zip file. Users could run the routes.py file and then visit the website through the link listed in section A and B.

Section A: Elasticsearch API (<http://127.0.0.1:5000>)

Firstly, we used Elasticsearch as our choice of database to store our NYC 311 dataset. Elasticsearch indexed each record of the historical requests and allowed us to build a search engine to search for different complaints and the associating agency that is capable of solving the respective case. After typing the descriptor of complaint in our input box and clicking on the “Search” button, the engine would return a list of records with agency, agency name, complaint type and the resolution description which demonstrates how the city department reacted to the complaint. For example, searching “parking” on the website, the engine returns the Agency name of New York City Police Department, complaint type of illegal parking and resolution descriptions that tells whether and how the associating department solved the problem. The user could start new searches by clicking on “Clear Results”.

311 Service Request Locator

Query 311 Service Information

Descriptor

[Clear Results](#)

Agency	Agency_Name	Complaint_Type	Resolution_Description
NYPD	New York City Police Department	Illegal Parking	The Police Department responded and upon arrival those responsible for the condition were gone.
NYPD	New York City Police Department	Illegal Parking	The Police Department responded to the complaint and took action to fix the condition.
NYPD	New York City Police Department	Illegal Parking	The Police Department responded to the complaint and determined that police action was not necessary.
NYPD	New York City Police Department	Illegal Parking	The Police Department responded to the complaint and took action to fix the condition.
NYPD	New York City Police Department	Illegal Parking	The Police Department responded to the complaint and determined that police action was not necessary.
NYPD	New York City Police Department	Illegal Parking	The Police Department reviewed your complaint and provided additional information below.
NYPD	New York City Police Department	Illegal Parking	The Police Department responded to the complaint and took action to fix the condition.
NYPD	New York City Police Department	Illegal Parking	The Police Department responded to the complaint and determined that police action was not necessary.
NYPD	New York City Police Department	Illegal Parking	The Police Department responded to the complaint and took action to fix the condition.
NYPD	New York City Police Department	Illegal Parking	The Police Department responded to the complaint and took action to fix the condition.

Section B: Spark Webpage(<http://127.0.0.1:5000/spark>)

Since the search engine we built on Elasticsearch only matches records that contain the exact keywords users typed in the input box and the main function is just to show detailed information about historical records, we built another tool in Spark MLLib using NLP techniques to allow users to search for similar complaint types grouped by semantics. For example, using the same keyword “parking” as Section A, besides issues that contain the words “parking”, other issues we can frequently see in parking areas such as dumping and illegal posting of advertisements are also returned in the output and sorted by similarity. This tool lets users see how different agencies handle certain types of complaints under the same theme to help them locate the agency they should reach out to more precisely and efficiently.

311 Service Request Locator

Query Similar Complaints in 311 Service Requests

Tell us a theme to search for similar complaint types
(e.g. parking, taxi)

[Clear Results](#)

Agency_Name	Complaint_Type	Similarity
Department of Transportation	Broken Parking Meter	0.9052613497808402
New York City Police Department	Illegal Parking	0.8393931385115191
New York City Police Department	Posting Advertisement	0.7760118707911184
Department of Sanitation	Illegal Dumping	0.7245579924918752
Department of Sanitation	Illegal Posting	0.5817527041384817
Department of Housing Preservation and Development	PAINT/PLASTER	0.5438900879702347