

Computer Science Capstone Topic Approval Form

The purpose of this document is to help you clearly explain your capstone topic, project scope, and timeline. Identify each of these areas so that you will have a complete and realistic overview of your project. Your course instructor cannot sign off on your project topic without this information.

INFORM INSTRUCTOR:

Potential use of proprietary company information: (Y/N)

ANALYSIS:

1. Project topic AND description:

Topic: Traffic stops in Rhode Island

My project topic is using ten years of information on Traffic Stops in Rhode Island to analyze and predict getting pulled over on a given day/month of the year.

Client:

The client for this project is a fictitious motor vehicle insurance company called RI Drivers. This company uses its clients' past driving record for categorization into plans for coverage. MY role is to create this research-based tool to assist RI Drivers in informing their customers and maintaining a customer base of safe and responsible drivers.

Any organization regarding motor vehicles has the potential to benefit from this tool. By studying past data, one would have the ability to discover potentially 'dangerous' driving times, or the context for many traffic stops. The forecasting piece of this tool in particular would allow the user to compare a customer's traffic violation with what is predicted to see if a violation is within 'normalcy'.

2. Project purpose/goals:

The purpose of this project is to inform Rhode Island drivers of information regarding driving such as the frequency of traffic stops, how much time it takes on average, and if there is a relationship between the number of traffic stops and the date.

I plan on using techniques such as Linear regression and K-Means Clustering to train the predictive model.

DESIGN and DEVELOPMENT:

1. Computer science application type (select one):

- Mobile (indicate Apple or Android)
- Web
- Stand-Alone

2. Programming/development language(s) you will use:

Python 3.8- with libraries such as numpy, matplotlib, sklearn, and pandas

I will also be utilizing a Jupyter Notebook in the Anaconda suite. All tools are open-source.

3. Operating System(s)/Platform(s) you will use:

Windows 10

4. Database Management System you will use:

Microsoft Excel for initial spreadsheet viewing.

5. Estimated number of hours for the following:

- i. Planning and Design: 20
- ii. Development: 20
- iii. Documentation: 20
- iv. Total: 60

6. Projected completion date:

1/31/2021

IMPLEMENTATION and EVALUATION:

1. Describe how you will approach the execution of your project:

I will read the csv file into a Jupyter Notebook and use libraries like pandas, matplotlib and numpy to clean and manipulate the data set. I will use clever querying and linear regression to predict the number of traffic stops in RI on a given day. Other data could also be used like gender, race, and time of day.

Within the Jupyter Notebook, I will be allowed to work with the data in-line and use markdown cells to describe the analysis as I draw conclusions.

The data set needs to be cleaned and preprocessed. After that, the predictive model needs to be created. Analysis of model and data needs to be done. Finally, the write up of the official document along with any conclusions and data visualizations.

X This project does not involve human subjects research and is exempt from WGU IRB review.

STUDENT SIGNATURE

Gary Swider

By signing and submitting this form, you acknowledge any cost associated with development and execution of the application will be your (the student) responsibility.

COURSE INSTRUCTOR'S NAME:

Joe Barnhart



COURSE INSTRUCTOR APPROVAL DATE: January 12, 2021
