

Final Project

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Introduction

Our final project is to prepare a dashboard to be used by City of Baltimore Vehicle & Fleet Management Department, it helps them see which vehicle is likely to be broken quickly and hence could have a comeback, and which vehicle has a low risk of Comeback, This tool will thus help the city take more efficient and cost effective decisions. This tool could help save a lot of valuable tax payer's money and at the same time make sure the fleets are available when needed.

The Business Problem & Client & Problem The Application Repsosse

Our Client is the Vehicle Repair Department of Baltimore City government fleet management system, they are having an unusual problem, they are spending too much on vehicles and too many are coming back too often, or at least this is what they perceive, they want us to analyse their data set and give a mathematical definition of 'what exactly is a comeback'. We start by exploring two vehicle spending and developing some tools to keep visiting thorough our analysis, and ultimately defining a comeback, and then finally predicting it to help the city better manage their fleet and reduce their spending.

The problem even after the machine learning model would be how to convey this information efficiently, effectively and properly to city officials and mechanics

This is where our application will help, our application in JavaScript will make this data available in a streamlined way to the Mechanics and City officials so that they can see the above prediction model results and vehicle history all in charts format, as well as with interactivity and will do it effectively to save time and effort and make the repair decision making process faster, efficient and stream lined.

Map for JavaScript Application :

While most of the application's major purpose would be the dashboard. There would also be a key map on location of cctv data, this will help to deploy vehicles after they are repaired, and the officers can refer to nearest cctv locations to both get vehicles to workshop and to deploy them back.

Data Sets :

- 1) The most important dataset which we are working with for our practicum has been provided by the city . This data would be made available to the app, and this is what the *Dashboard* would work on.
- 2) The Second Data would be for mapping and have location data of cctvs, which can help deploy and call vehicles to and fro workshops : These are open Data Sources for which the link are below:

<https://data.baltimorecity.gov/Public-Safety/CCTVMAP/nn6t-vxz4>

<https://data.baltimorecity.gov/Public-Safety/Fells-Point-Downtown-CCTV/7awx-knb7>

Technologies used

We Would be using leaflet, turf, jquery, canvasjs, and chartsjs.org and maybe even mapbox, we will decide between mapbox and leaflet after testing both for results.

Design specifications : User experience

Our App is being developed for the public sector, it will be used by city officials and mechanics, we want to thus make it as easy and efficient to use, as possible. This will save them time in an engaging way, instead of

Briefly it will be like financial dash board, or a technical dashboard or a healthcare dashboard. Some websites where users can see their internet status speed, in a detailed way such as network info download vs upload as well technical aspects as well as similarly, websites where financial stock data or healthcare data as in these times is being shown as engaging charts come similar to what we are trying to create, in however a different context, as our app is for select users, despite that we want to make it engaging and easy to use, as even though our userbase is select, they are public level officials, and their work impacts everyone's quality of life and health and safety in Baltimore City, hence we view our app as a very important tool and it's user experience vital.

Design specifications Layouts and visual design

Our Application will be closer to a **financial** data board, and other similar dashboards discussed above, we will hover also have a mapping data, even though the website will mainly be a dashboard, we may make the user scroll down for map, however main screen will have links using html so that the initial page, shows all links, and the user does not need to scroll down to see everything, and can easily select links on the page to go to different sections.

Anticipated difficulties

We have started work on our app, Charts in general are a thing we covered later in class, and only virtually so while we have got them working, we know we could be facing some challenges, and currently we are finding it very difficult to plot charts with database data, the task is much simpler with dummy data, plus we will be publishing this app on UPenn's Website, and we will be posting the dataset online, to refer to it, so our prior task of linking to the database might get even tricky as ajax can be unrealisable and hard to debug at times.

We however see these difficulties as doable, and anticipate to make them a learning experience of us and not a hindrance.

Missing Pieces

In terms of Charting we would like to learn more about efficient ways to link to database and have multiple selection features, and perhaps more about what chart libraries are best for simple or interactive or filters or combination of these ideas. However we are able to get the desired results right now, but it would be good to learn about more libraries to do this more efficiently.

We would like to include information about gprs tracking, where the app could also show where vehicles are moving live, and hence workshops can prepare for their arrival and help navigate them to other workshops when they are busy. These are some ideas about which we would want to learn later in our careers.

