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CSC 415

Dr. Pulimood

Assignment 3 - Open Source Software: Proposal and Specifications

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Github Repository: pomps8/CSC415\_AnthonyPompili\_ECar

Social justice issue to solve: Environmental Issues and Cars today

The project title: E-Car

Option: 2

Platform: Mobile Application, iOS

Language: Swift

Framework: Accounts.framework, MapKit.framework, UIKit.framework

Project Idea: Today, personal transportation takes huge tolls on the environment, E-Car looks to reduce this impact by showing you the impact your car / other cars make, and how to change your driving habits.

Why it's innovative and interesting: My application looks to calculate your personal footprint you are currently leaving, driving your current vehicle today, and suggest alternatives you can take to reduce this footprint. When looking for other cars, you can see their footprint as well, how it compares to yours, and see better choices for your commuting needs. **If time allows**, an interesting feature that could be implemented is one that keeps track of your driving habits, how fast you accelerate, if you are going the speed limit, if you break too much after accelerating, etc. This would allow the user to see how their driving habits, and see smart suggestions that can help better the environment. This application will hopefully give users a third eye to how their cars / other cars, and possibly their driving habits, are affecting the environment, giving them ways to help better everyone by driving better, and not looking to purchase cars that make worst pollution if they do not need that vehicle.

Additional Ideas from Comments: Mileage tracker for the car, and a system to keep track how much gas you have used with your car as time progresses. This allows for MPG calculation, and show, in the long run, the impact your car will make. Again, **if times allows**, this will be something I look to complete.

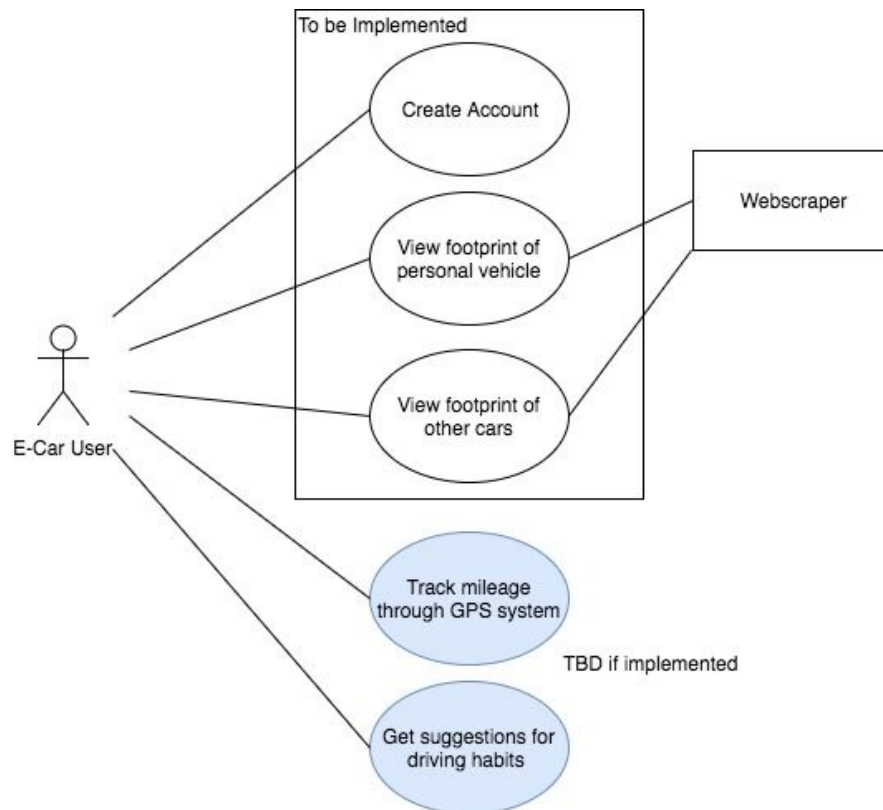
### The Algorithm:

1. Comparative Algorithm: This will take the information you plug in (make, model and year of your car) and calculate the respective environmental footprint for it. This can also be used to see the footprint of other cars, and compare them to yours (possibly if you are going to purchase a new car soon, but you wanna take these calculations into consideration).
2. Speed Tracking Algorithm: If enough time is allotted for this project, an additional algorithm would track the user's speed on roads, see if they are following the speed limit, if they are accelerating too much, and provide suggestions to their driving habits to reduce their footprint. This will work well with the MPG and gas tracker for your car, another feature that may be implemented.

The Data Structure: A BST could possibly be used to store each car manufacturer as nodes, then each node is an array with its respective models, and years for each vehicle it's made / its data for each car to calculate its footprint. This would result in faster parsing to pull the data quick that the application is pulling from the website that holds all information on cars.

New software engineering concepts I expect to learn / reinforce: I'd like to reinforce my concept of the different diagrams (use case, class diagram, any type of UML diagram, etc.), as well as my code documentation skills. Some new skills I hope to gain is learning about different website's data and how to use their data (ex. The different cars for each brand and their data to calculate their footprints), and how to check licenses to make sure this type of data scraping is allowed on their website.

## Use Case Diagram



How I learn Swift / platform: In the past, I had some experience with Swift 1.0, and some work with Swift 2.0, but Swift is currently in its 3.0. Additionally, I have used Xcode and have developed a firm base to how the iOS platform works. There are certain websites that offer online books that I can read to solidify my knowledge of Swift and the iOS platform, and use examples to strengthen my skills. When designing the application, I will lay out the structure of the code segments, then look up any specific kits / APIs that I need if I do not know a certain segment.

## License Comparison:

There are a few licenses that are applicable for this project. The first is the MIT License. This allows users of my code to take what I have done as a basis, and build off of it. I do not plan on collecting any profit from this application as I want people to help the environment at no additional cost than it already is (being that "going green" is decently expensive in some areas today). 3-Clause BSD License is another license that could be used, so that people feel inclined to use my code for a base of their project, but will prevent them from using my artwork. This will push users of my project to craft their own vision of this application, building off my base principles. The third license I considered for my project is the GNU General Public License v3. This would allow people who download my application to edit the source code, and republish

the project as their own. This license specifically respects the freedom of others, and I want anyone who wants to download and use my code to feel comfortable in using it.

License Choice: With 3 licenses considered above, I decided to go with the MIT License. This will give me the ability to develop my own application and publish it, allowing users to create their own version of my application. My reason for this is to really get more applications into the market place to have a better chance in aiding the environment.