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CSC 415

Dr. Pulimood

Assignment 5 - Open Source Software: Analysis and Design

December 1, 2017

Link: https://github.com/pomps8/CSC415_AnthonyPompili_ECar

Github Repository: pomps8/CSC415_AnthonyPompili_ECar

Project: E-Car

Social justice issue to solve: Environmental Issues and Cars today

The project title: E-Car

Option: 2

Platform: Mobile Application, iOS

Language: Swift

Framework: UIKit.framework, SQLite.framework, Foundation.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. Seeing how your car's gas usage / footprint will change how you drive, and seeing other car's gas usage / footprint will direct you in your choice for your next car. With this considered, this will benefit the social justice issue for environmental issues because it allows individuals to change the large landscape at hand.

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.

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.

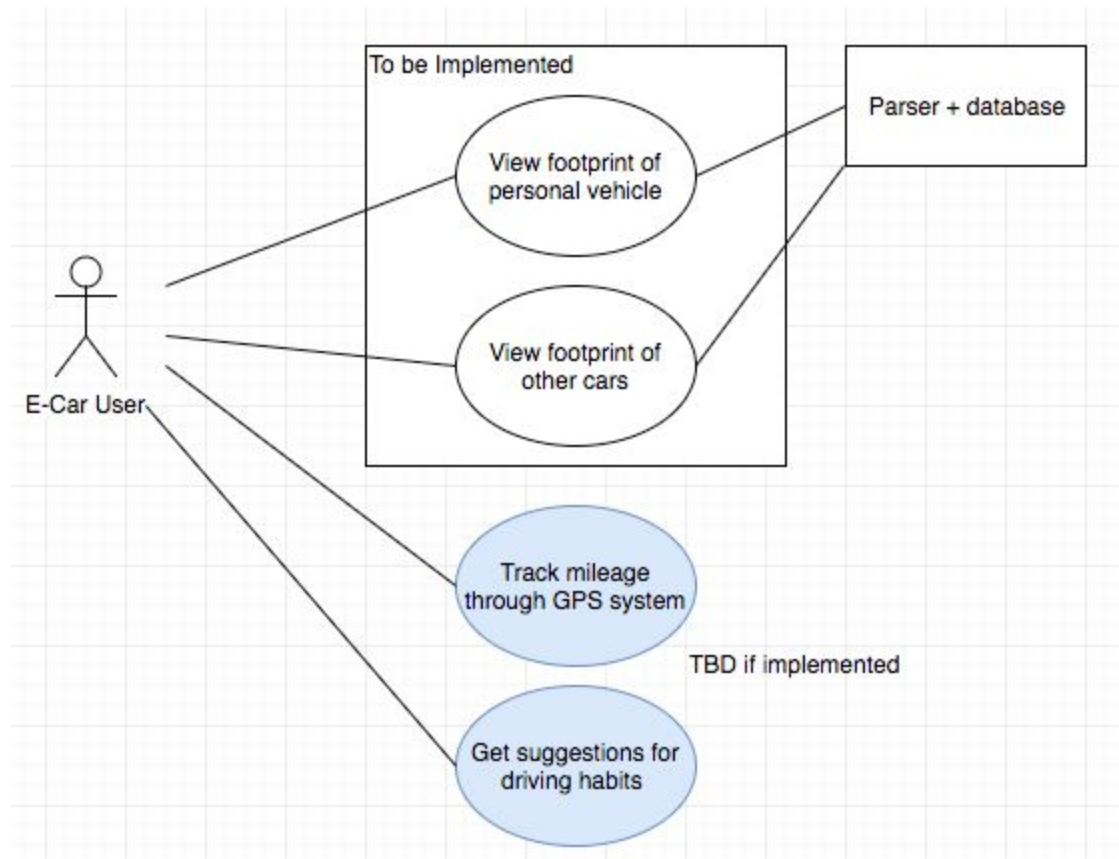
The Algorithm:

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).

The Data Structure: A SQLite database is used to pull all of the information for the cars into arrays in the application. Using SQL queries allows for fast pulling of data, putting efforts on the database versus my applications engineering.

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. Creating SSDs and detailed class diagrams will be something I'd like to really understand after this project. Additionally, going through a small "SDLC" where I'll have to go back and update code through the use of github will be something I'd like to get used to.

Use Case Diagram



****Note:** Scraper will be implemented by me

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 4.0. 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). Some strengths are that it allows users to actually use my code without any worry about copyright, but a weakness is that it really prevents my application from being profitable if enough people use my code for their own applications. 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. A strengths for this license is that my code base will be more widely used, but it prevents anyone from copying my user interface. 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. Finally, the strength of this license is that it creates more of a open source type project, versus a stand alone project, but has no protects for the creator (in this case) of the project, so anything can be taken from my original project.

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. I want this to be a very open environment for people to use my code base for their own projects. I believe an application such as mine that can really push the concept of helping the environment with personal contributions. That is why I chose this specific license.