**Proposal for MSE Capstone Project**

**Project Project Title:**

**iOS Application for reading information from the car**

**Student Name: Dezheng Wang**

**Project Sponsor: Andrew Berns**

**Faculty Advisor: Dr. Andrew Berns**

**Date of Submission: 15-February-2016**

**Objective:**

This program is to develop an app for reading in information from an On Board Diagnostics II (OBD II) scanner. The app has two main functions. The first one is to gather diagnostic information over a long period that can be used to monitor a vehicle’s operation and discover potential concerns before they become serious faults. The second one is to help drivers identify the effect certain configuration changes have on their car’s operation. For instance, a driver may suddenly feel like that his or her car consumes more gas than previous days and they need a tool or application to help them identify the problem.

**Background:**

On-board diagnostics (OBD), a new standard first introduced in the early 1980s, giving the vehicle owner or repair technician access to the status of the various vehicle subsystems. OBD-II is an improvement over previous OBD models (such as OBD I) in both capability and standardization. The OBD-II standard not only specifies the type of diagnostic connector and its pinout, the electrical signaling protocols available, and the messaging format but also provides a candidate list of vehicle parameters to monitor along with how to encode the data for each. The OBD II was adopted for all cars sold in California since 1996 and OBD II systems are in most cars and light trucks on the road today. When people want to get the information of their cars, for example, people may want to get the average speed of their cars. OBD-II can provide data to allow a universal inspection and diagnosis method so that users can have good understanding of their cars. These inspection and diagnosis method can help users to identify if there exist problems in their cars before they become major malfunctions and give them some hints to users’ special needs. For example, users may feel like their cars burn more fuel than expected and may wish to analyze their current operation against previous trips. Second, users may wish to check their feelings. In the other word, they want to know if their cars really need more fuel as they thought.

**Current Project:**

The current project focuses on developing an App for reading in information from an OBDII scanner from a car. The app must have the following characteristics:

* This application is an iOS App.
* The application will allow a driver to determine if a configuration change they performed has altered how the car performs compared to previous trips.
* This application can analyze this data from the car and give some useful hint to users, such as repairing warnings.
* This application can record drivers’ driving information and help drivers to develop good driving habits.

**Challenges:**

The following are some of the challenges in this project:

* I will use an OBDII interface, sometimes referred to as “OBDII adapter”. This is a digital device whose job is to convert OBDII signals that the host system can understand. In general, we connect the adapter to an OBD-compliant vehicle, a ECU (Electronic Control Unit). Then we can read the car’s data from the OBDII adapter. So, it’s important to know how to use the protocol that is used for communication between iOS device and OBDII adapter.
* I have never developed an IOS application before, so learning about related knowledge will be challengeable.
* After reading in information from the OBDII adapter, I will try to use different statistical methods to analyze the data and draw a conclusion of the car’s performance (may be represented by graphs). Once some exceptional data appears and the application can quickly determine if there was a significant change in the car’s operation.

**Project Schedule:**

The following schedule is proposed by the student, and is agreed by the sponsors:

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| --- | --- | --- | --- |
| **Particular** | **From** | **To** | **Credits** |
| Study the problem and requirements research | Sept 01, 2016 | Sept 30, 2016 | 1 |
| Developing requirements documentation | Oct 01, 2016 | Oct 31, 2016 | 1 |
| Create and test first prototype | Nov 01, 2017 | Dec 31, 2017 | 3 |
| Create and test second prototype | Jan 01, 2017 | Feb 28, 2017 | 3 |
| Create and test final product; Write final report | Mar 01, 2017 | Apr 30, 2017 | 3 |
| Finish Project Report and Project Demonstration | May 01, 2017 | May 15, 2017 | 1 |

Total: 12

The schedule does not include the time for the oral examination.

**Resources**

The student will use his own computer for development and testing. The OBD-II adapter and vehicle to test the app will be provided by the project sponsor.