

Student Name: Philip Nolan Student Number: D08113886 Mobile Number: 0868915480	Stream (SDIS/GP): SDIS
Project Title: Text & Speech Auto Response, Positioning & Statistical Gathering Driver Safety App.	
Summary (approx 200 words) The goal of this project is the investigation & development of an application for Android OS powered mobile phones that can provide a number of features that can assist the safety of a person driving a vehicle. Various research studies carried out by a number of institutes have discovered that texting while driving can have a huge impact on reaction times of people in control of a vehicle. Texting while behind the wheel can be even worse than driving under the influence of alcohol. One study, conducted by <i>Car and Driver</i> magazine in June 2009 in Oscoda-Wurtsmith Airport, Michigan used two drivers in real cars and measured reaction-times to the onset of light on the windshield. The study compared the reaction times and distances of the subjects while reading a text message, replying to the text message, and doing the same impaired. The study showed that at 35 mph, reading a text message increased the reaction time the most, 0.12 and 0.87 seconds. Impaired driving at the same speed resulted in an increase of 0.01 and 0.07 seconds. In terms of stopping distances these times were estimated to mean: <ul style="list-style-type: none">• Unimpaired: .54 seconds to brake• Legally drunk: add 4 feet• Reading e-mail: add 36 feet• Sending a text: add 70 feet The app will comprise of a text - speech function that will read aloud received messages & send auto responses to the sender in SMS format. The app will also provide locational data of the driver's current whereabouts. I also intend to provide an ETA for when the driver will be free to respond, and colligate statistical information to a website that will gather data about how often the app is used and what kind of activity occurs over a period of days, weeks and so on of driving.	

Background (and References)

The core aspects to the project are: Text to Speech, Real Time Positioning and Web Services.

A text-to-speech (TTS) system converts normal language text into speech. It was a supported function first introduced to Android OS version 1.6. This is the version I will be developing for.

Although Android 2.2 was launched in May 2010 (Revision 1) and is the most current build, I want to ensure my app is backwards compatible with older versions and as 1.6 is the most stable release that was most widely distributed, it is the platform I am going to work with.

Real Time Positioning – Android supports locational sensors of the phones position: longitude, latitude and altitude. I will use these to provide the data on the whereabouts of the vehicle being driven.

Web Services - this will provide the tools needed to gather and analyse data collected with the app as it gives the ability for various components to work together. The web services will be developed using Java technologies which are required by Android.

The goal of this project is to create a complete safe driving system to prevent the driver needing to use the phone, and also provide usage statistics which may prove interesting in determining the reduced chances of accident that may occur.

References:

- Java: How to Program (Deitel & Deitel)
- Hello, Android: Introducing Google's Mobile Development Platform (Ed Burnette)
- Sams Teach Yourself Java in 24 Hours (Rogers Cadenhead)

Proposed Approach

To control the development of my proposed project, I plan to follow a 5 step system life cycle approach.

- Inception
- Elaboration
- Prototype
- Build & Test
- Deployment

From the outset of my work, the use of an open framework is a key design requirement. This will allow for the ease of extension in the future. This is why Android is the perfect platform to develop on.

The next step should be to investigate how I can integrate the different functionalities I require to work together.

I also plan to take the data that has been gathered; send, store and analyse it online.

Evaluation Criteria

The sections by which the project should be evaluated are as follows:

- Quality of research
- Completeness of requirements analysis
- Overall design
- Code structure and robustness
- Successful implementation of technologies

While evaluating the project, a key consideration is how open in nature the design and code of the project is, in order to provide extensibility and inter-operability solution. This is basically a complete must have based on the app needing to work on the Android OS, regardless of the hardware running it.

Deliverables:

- Project dissertation
- Help /User Guide
- A functional application for demonstration

Priority Features:

- Ability to automatically reply to texts
- Text to speech reading functionality
- Provide location of vehicle
- Provide ETA when journey should be complete

Secondary Features:

- Analyse usage of system online
- Allow easy deployment of app to Android powered devices

Technical Requirements:

- Laptop
- Android OS 1.6 powered phone

Technologies being used:

- Java – J2EE
- Netbeans/ Eclipse
- Android SDK/ App Inventor
- XML, HTML, MYSQL Java Servlets for web services

Project Plan

October 2010:

Research technologies required and configure and decide what tools need to be used.

November 2010:

High level design, requirements analysis should be documented. System Design and study how the code should be constructed.

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December 2010:

Begin writing code; develop a test plan for debugging later which will be needed in the test phase. Develop presentation in power point.

January 2011:

Continue coding and documentation.

February 2011:

By this stage, I would hope to have some level of working application. Concentrate on expanding functionality. Work on bug fixing and begin the test plan.

March 2011:

Re-run test plan on revised build, document changes and results. Finalize documentation.

April 2011:

Review documentation and user guide for project completion.

Lecturer Comments

great idea!

Student Signature

Philip Nolan

Date

6/10/10

Lecturer Signature



Date

6/10/10