CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

J1401

Project Title

Rescuer: A Hands-Free Mobile App for Emergencies with Easy Access for the Physically Impaired

Abstract

Objectives/Goals

The objective of this project was to create a mobile application that can send predefined text messages with the current location when the user inputs a volume key pattern on his/her mobile device (by pressing the volume buttons in a specific sequence) or when he/she speaks a user defined voice recognition key word without having to launch the application or unlock the phone.

Methods/Materials

A computer, emulation software, android phones, android studio, Pocketsphinx (voice recognition library), and java were used to create this mobile app.

I experimented with multiple API's to achieve the most accurate voice recognition and location. I was also able to reduce CPU usage by multi-threading my application. During the development phase, I created 21 different app builds. By the end of 16th build, I was able to achieve the functionality that I wanted. After this, I polished my user interface (UI) to simplify it, and to provide more customization for the user. I was finally satisfied with the app in my 21st build.

Results

I created an efficient mobile app that quickly contacts for help in emergency situations. My app runs in the background, so it can be used without launching it, even when the device is locked. An SMS with the location of the user can be sent just by saying a keyword or pressing the volume buttons in a specific pattern. My application runs on approximately 97.3% of android devices, with a minimum android version of API 14, or Android 4.0.3/Ice Cream Sandwich, which means that my app can run on almost all Android devices efficiently.

Conclusions/Discussion

My final app was far more effective than envisioned in my original blue prints.
It has many applications, for example:
- Dangerous Situations: When user needs to signal for help secretly (e.g. At gunpoint, kidnap, assault, etc.)
- Medical Emergencies/Accidents: When people don't have time to launch the application/call/text (e.g. Heart attack, car crash, etc.)
- Physically Challenged: When a user can't move over to the phone to signal help (e.g. Visually impaired people can use voice recognition), or when the user can't speak (e.g. Speech impaired people can use hardware key response)

Summary Statement

I made a mobile app that runs continuously in the background (even when the phone is locked), and can send an SMS with the user's location after hearing the user's personal keyword or upon receiving a volume key pattern.

Help Received

Parents bought my project board and test phones from the store. Parents drove me around the city so I could test the location feature of the application.