EGR 100 Introduction to Engineering Design

Summer 2017

Project 2 – Cell Phone App Inventor

Background: With the growth of smart phone prevalence in society, a large market has developed for innovative mobile software that solves a problem or provides entertainment. In this project, you and your engineering team will apply the engineering design process you have learned in lecture and lab to develop an application that meets a currently unfulfilled need. Your team will use the design, build, test and validate process to develop an application from the initial concept to a final fully-functional prototype.

Objective: Create an original Android cell phone game. Teams are to thoroughly research applicable background information on the game of interest to ensure there is a need for the proposed application that is not currently being met with apps that are available in the Google Play Store. **At least one team member must own an Android phone, as the applications must operate on an Android based device.** Each team will use MIT App Inventor to create a cell phone game that MUST contain all of the following characteristics:

1. Graphical user interface (GUI) with images and a professional appearance
2. At least two of the following features:
    a. GPS capability
    b. Artificial Intelligence (i.e. a programmed computer opponent in a game)
    c. SMS / Text messages sent from program
    d. Video or animation playback of user created video/animation
    e. Input/Output from databases or websites
    f. Storage of user information (i.e. high score in a game)
3. Outputs sound
4. Full functionality and capable of running on an Android phone

Procedure: Teams are to approach the project using the principles of engineering design. Project checkpoints with the TA will ensure satisfactory progress towards a complete and functional program. Teams are to develop creative solutions to their problem through the iterative engineering design, build and test process. All code must be written by team members unless otherwise approved by a TA. Using unapproved code is not allowed and will be considered plagiarism. Teams found to have plagiarized code will at minimum receive a failing grade for Project 2.

Teams are to use tutorials on the App Inventor website as an introduction to programming for this project. All proposed games must be significantly different from any existing games. Special attention is to be given to the professional appearance and functionality of the program. Student teams will test the functionality and effectiveness of their designs through user tests. All proposed projects must be significantly different from any existing programs.

Materials: MIT App inventor is available online at no cost at http://appinventor.mit.edu/explore/. It is highly recommended that teams use MIT App Inventor version 2. Teams will not be reimbursed for the purchase of a phone.

Prototypes and Demonstration: An initial prototype is due with Checkpoint 2 during Lab 5A. For this checkpoint, your application must at a minimum be partially functional and include at least one working feature (i.e. GPS, artificial intelligence, SMS, etc.). A user survey is required to collect data from potential clients on user functionality, ease of use, and graphical interface. The survey data should be used to improve the final prototype. The final prototype will be demonstrated in Lab 7A. For this demonstration, your application must be fully functional on an Android phone and meet the requirements listed above.