**Date: 9/19/2018**

**CENG 319 Project Proposal**

**Project name: Portable Color Detection device**

**1)** Our team members are Suong Luong, Divendra Sowamber and Rutvij Dodiya.

**2)** Summary: Our project will be including solar energy to power up the device, temperature of the surroundings, solar panel and color detection as main purpose to build the application. This application will show the change in temperature, color sensor will detect change in color of fruit/vegetable when ripening. To be specific, the application will retrieve data from the database which will include detection of color from the color sensor, readings of input voltage from the solar panel and temperature of the solar panel in degree Celsius. This device will be powered up by battery charged from the solar panel. The screen of the application will display battery percentage, temperature of the surroundings and the state of fruit. Courses and topics are related to this project are embedded systems which we learned about ideas on GPIO, code connections and datasheet of raspberry pi. Database with java which we learned about retrieving queries from the database. Internet programming which we learned about how to set up database and a little bit of website design in html.

**3)** We will record data such as temperature, voltage from the solar panel, color detection and then send it to the database. The plan to implement the application is to divide the workload by 3 of us where each one will write specific functions. We can refer to the lecture and lab notes but write most of the code by ourselves. The MVC architecture of our project shall be decided among us where we will fall in agreement with specific format and layout of the project. For example the design of the system will include something like welcome page where the user can find drop down menu on the right handside at the top which will have 3-4 menu including Login/Register option. When a user enters login page we will try to build a security link will be sent to users’ mail for verification purpose. After successful account creation, next page will simulate calculated results of color, temperature and voltage. Also user will able to see daily usage of application and report in drop down menu. As an additional feature may include pop ups like asking user location.

**4)** The time estimation for our project: For this semester, we will work both on hardware and software sides. Next semester, we will combine all into one application which connect to Raspberry Pi via bluetooth, wifi or cables. An estimated time for this semester’s project is 7 to 8 weeks. If in case there is a problem in the middle, we plan to get help from our professor, friends and developer.android.com but in rare occasions.

**5)** Color Detector(by Saden Studio), Color Meter(by vistech.project). However, our application will display battery perentage, temperature and color detection. It is connected to raspberry Pi to get the data instead of using phone hardware (camera).

**6)** This semester, as testing is concerned, We shall test the features/readings from the application and see whether it is a success or needs improvement/ fixing bugs. Then next semester, the testing will be done in whole, that is testing the whole software project with our hardware project. So far for testing our application, we would need to test it in real situations such as detecting an object.

**7)** Conclusion: In the light of the above, we are committed into completing this project on time. We hope to get all 3 projects into a single completed project for the next semester, so that the software can communicate with the hardware fully.

8) References: <https://www.raspberrypi.org/blog/colour-sensing-raspberry-pi/> -> for Raspberry Pi sources and programs.