

## PROGRESS REPORT

### Overview

Over the last two months, Alnair Innovations have managed to meet most of the design and functional requirements for *ColorAid*, a device designed to aid those who are color deficient. The major units of the device have been implemented, and the majority of requirements for the proof-of-concept system and some for the final production system are being reached.

### General Requirement Analysis

*ColorAid* is for those who are color deficient, and aims to aid them interact more efficiently with the world around. One of the goals for the device is maximally intuitive usage and operation. Physical, electrical, mechanical, environmental, reliability, safety, performance, and usability requirements, as outlined in the functional specification [1] have been referred to often.

### System Level Analysis

Implementation of *ColorAid* has been divided into major units as follows: sensor unit, control unit, and user interface. All constituents of Alnair Innovations have participated in at least one of the areas aforementioned.

#### Sensor Unit

- The sensor unit currently operates as planned. Different calibration sources such as a bright LED, halogen light and a white paper were used and tested under the procedure provided by the manufacturer of the device. The best results were obtained when white paper was used as the source of calibration, and RGB values obtained are of medium/high accuracy, except for the colors that are found at the bottom of the CIE 1931 color chart.
- Currently, work is being done to map correct names of color to RGB values obtained from the sensor unit.

#### Control Unit and features

- The control unit is being used to access the sensor unit and the user interface unit. Through the control unit, the other units are being accessed and developed.
- Currently, features such as “Save,” “Album,” and “Delete” are being implemented and tested.

## User Interface

- The user interface unit is able to successfully interact with the user. The unit is successfully interfaced to the microcontroller, the control unit, and the screen displays the correct interface for every feature implemented so far. The system works properly when inputs from the peripherals are activated (mode, ok, back buttons) and the correct features are displayed on LCD screen each time.
- Currently, the interface is being edited for fonts and sizes for different submenus.

## Budget

Alnair Innovations is financially sound. The budget created for the development *ColorAid* well within the initial prospect. The parts purchased for the purpose of the development and the implementation amount to approximately \$300, and it includes microcontrollers, LCD, sensors, electronic components and other parts. The funds for the purchases have been disbursed from our initial cheque of five hundred dollars from ESSSF.

## Human Resources

The members of Alnair innovations are still maintaining the healthy work environment. Weekly meeting are held to discuss the progress and further enhance the implementation procedures. Serious technical topics are openly discussed, and where needed constructive criticism is provided.

## Action Items

April 1<sup>st</sup> is the milestone date for a functioning *ColorAid*. All the major units are in the completion phase. These units will be integrated into one device and a fully functioning device is to be developed by the date. The system test plan for the integrated device is also to be completed in the next two weeks. Individuals units are currently USB powered. By April 1<sup>st</sup>, the plan is to operate the device with a 9V battery.

## Reference

[1] Alnair Innovations, "Functional Specification for Color Deficiency Aid Device *ColorAid*", Simon Fraser University, Burnaby, BC, Canada, February 2011.