Project Description

Our project is a digital light meter for photography. We are using an Adafruit Feather m0 microcontroller, a BH1750 light meter, an SSD1306 OLED display, and an ARDUCAM OV2640. The device will have buttons allowing the user to switch modes and set specific values and use its builtin SD card to save metadata about each photo. The camera will be used to store a reference photo alongside the recorded metadata for a given shot.

We are using the Arduino SDK to develop software for our microcontroller (CircuitPy was too memory inefficient for our device).

The chassis of the device will be a 3d printed case. If time permits, we would like to add a physical trigger for the record button.

Progress thus far

The pins for the Adafruit Feather m0 and BH1750 light meter have been soldered to their respective boards. The SSD1306 OLED display and light meter are both hooked up to the microcontroller and are being controlled by custom software. After the device turns on, the lux reading is continuously captured from the light meter and printed on the OLED display. We are also able to read and write from the SD card successfully.

The ARDUCAM OV2640 arrived in the mail yesterday and has not yet been integrated.

Difficulties

There were issues getting the BH1750 library to work properly. The library had to be manually edited and it experiences issues when delays are added into the main program. Further rewrites to the library may be required to convert it to an interrupted driven, asynchronous, design which may help with the timing issues.

The ARDUCAM OV5640 has been tested online to work with our microcontroller model, the Adafruit Feather m0. However, the model of our camera is OV2640. From our research, there is no reason it shouldn’t work with our microcontroller but that is a possibility.

In regards to the class as a whole, I think the skill demos and lecture materials have prepared us well to complete our project.