Senior Design Progress Report

|  |  |  |  |
| --- | --- | --- | --- |
| **Student**: | Brian Dye | **Team**: | 20 ENIGMA |
| **Semester**: | Spring 2022 | **Position**: | Team Leader |
| **Week**: | **12** | **Hours**: | 20 |

# Progress Description

This week I successfully created the push button interrupt for the LCD. Creating this functionality was necessary to reduce power consumption and extend battery life. When the user wants to know network status, battery level, and current GPS coordinates they can push a button which will 1) power the LCD screen and 2) create an external interrupt that sends the most recent network, battery, and GPS coordinates that have been made available by the respective modules. Instead of fetching fresh status updates from modules within the interrupt service routine, I decided to invoke a timer interrupt every 5 seconds to fetch fresh information from each module. Then when the user wants to see information on the LCD screen, it displays the latest information instead of making various serial communications to modules. This proved to be much more efficient.

I also worked on the communication interface between the host device and node. Nathan and I decided to take a conservative approach and send fixed data size packets over Bluetooth. When a packet arrives, it will generate a DMA interrupt which invokes an ISR. In the ISR, the STM32 will read the first n bytes for the command and take appropriate action. This is demonstrated below:

Text

Description automatically generated with medium confidence

# Printed Circuit Board (PCB)

PCB has arrived. We have made plans to start soldering the PCB tomorrow on Saturday 04/02/2022. Our current plan is to solder power components, then STM32F0 microcontroller, and finally each individual module. Between soldering each component, we plan on performing tests to ensure proper connections were established.

A picture containing text

Description automatically generated