

Background:

Project Objective: Develop a system to simultaneously collect both electroencephalograms (EEG) and electromyography (EMG) data and wirelessly transmit it to a user interface to be plotted and stored. Budget of \$1500.

Use Case: The system will be used to perform stability studies to study the neural modulation of skeletal muscles.

Version A vs Version B:

Version A – Functional Prototype

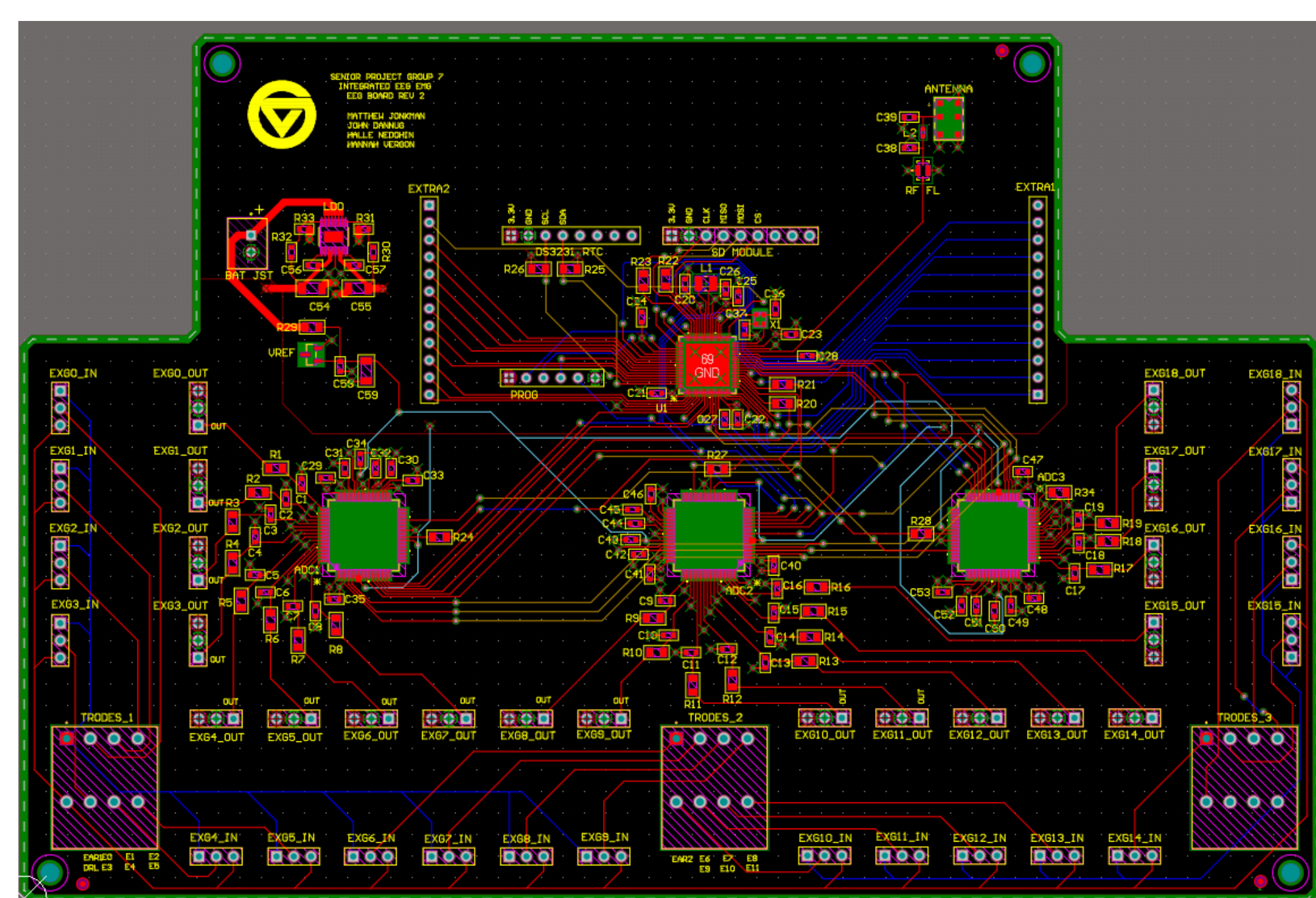
A fully functional wireless EMG-EEG system, called the NeuroMyo Sync, designed within time and cost constraints.

- **Simultaneous EMG channels: 2**
- **Simultaneous EEG channels : 5**
- **Electrode Placement:** Configurable to the 10-20 system.
- **EMG “Split Mode”:** Allows channel switching midway through a trial

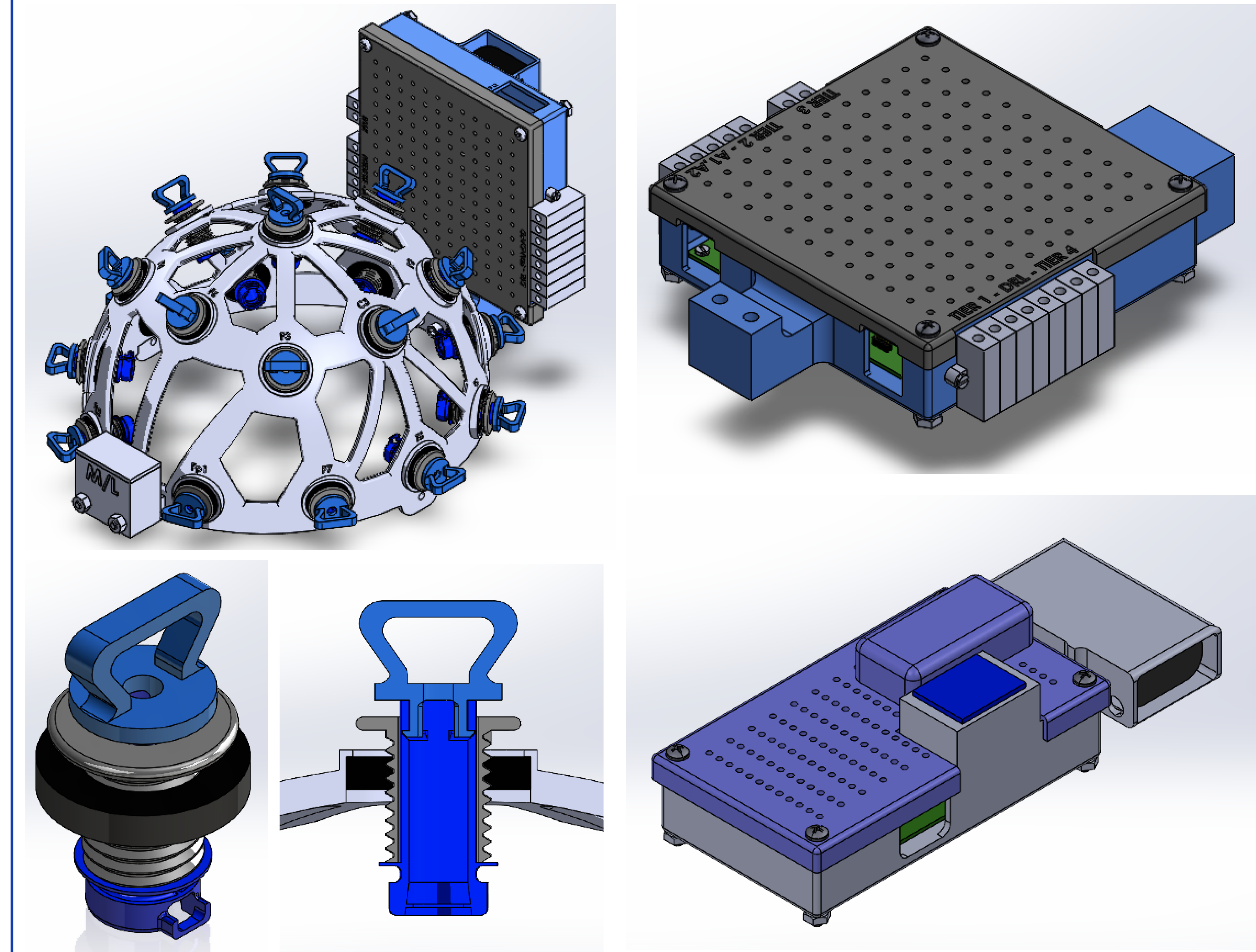
Version B – PCB Concept Design

System designed to support higher frequency ranges and an increased channel count.

- **Simultaneous EMG channels: 4**
- **Simultaneous EEG channels: 19**
- **Optimized for:** Large scale research studies.



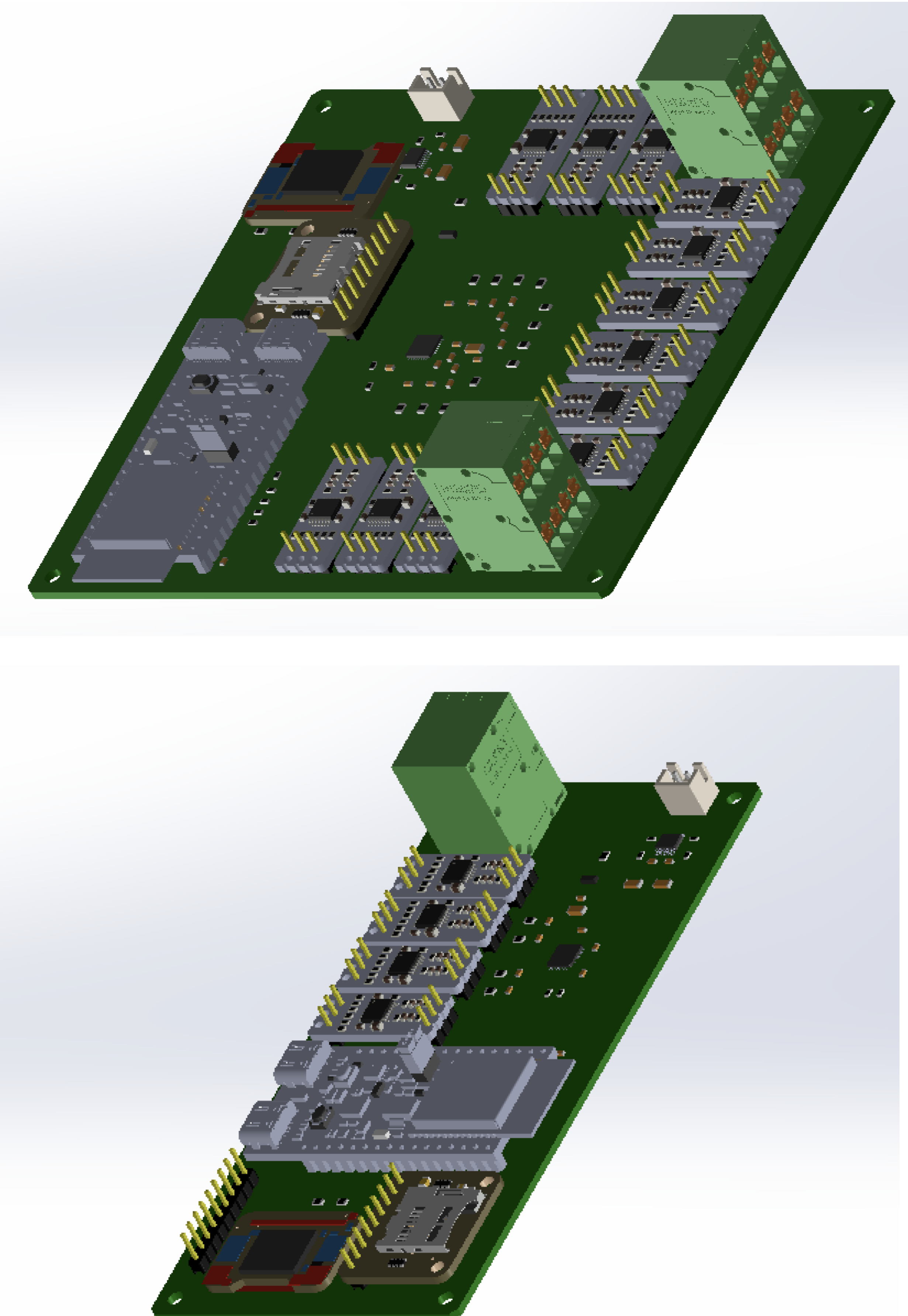
Mechanical Design:



Graphical User Interface (GUI):



PCB Design:



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