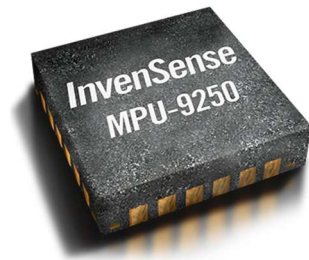


2024-10-03

- Met with team to discuss project scope and complete design review.
- Decided what parts to use to design the golf swing tracker project
 - Utilized MPU 9250 for our IMU, ESP 32 for our MCU, A201 Flexiforce sensors for force sensors (for grip sensor)



MPU 9250 chip



sensor

A201 flexiforce

- Discussed further stretch goals that we would work on after the project was complete and had extra time

2024-10-08

- Parts needed to be changed: ICM-20948 instead of MPU 9250 for IMU, FSR UX 400 sensors instead of A201 Flexiforce sensors
 - MPU 9250 got outdated → needed to find replacement → found ICM-20948, which actually had better specs in the magnetometer data collection / sensing



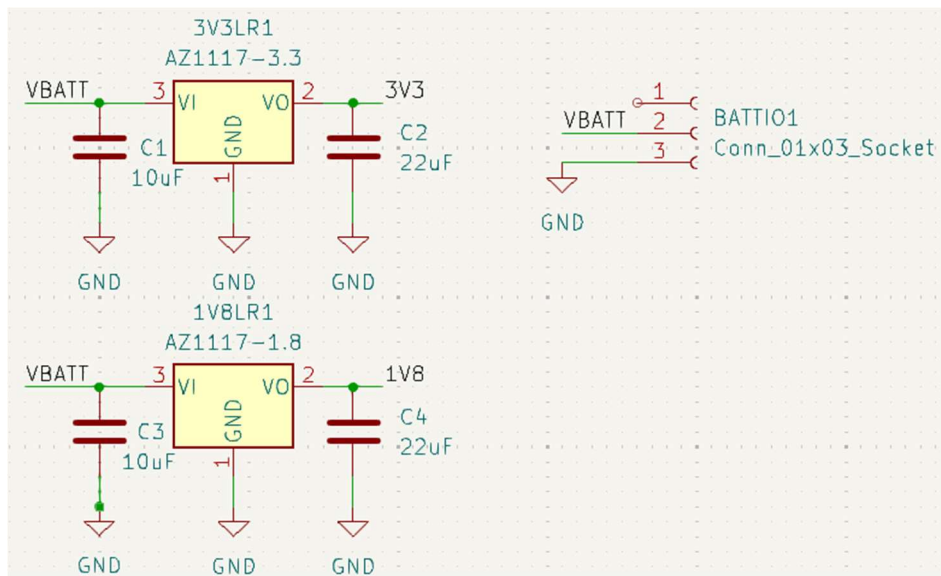
ICM-20948

- ICM-20948 had a breakout board we could work with, in case our PCB did not work
- A201 Flexiforce sensors too expensive → individual sensor costs around \$80 → found FSR UX 400 sensors at \$20 per sensor (had to choose albeit the lower accuracy during data collection)

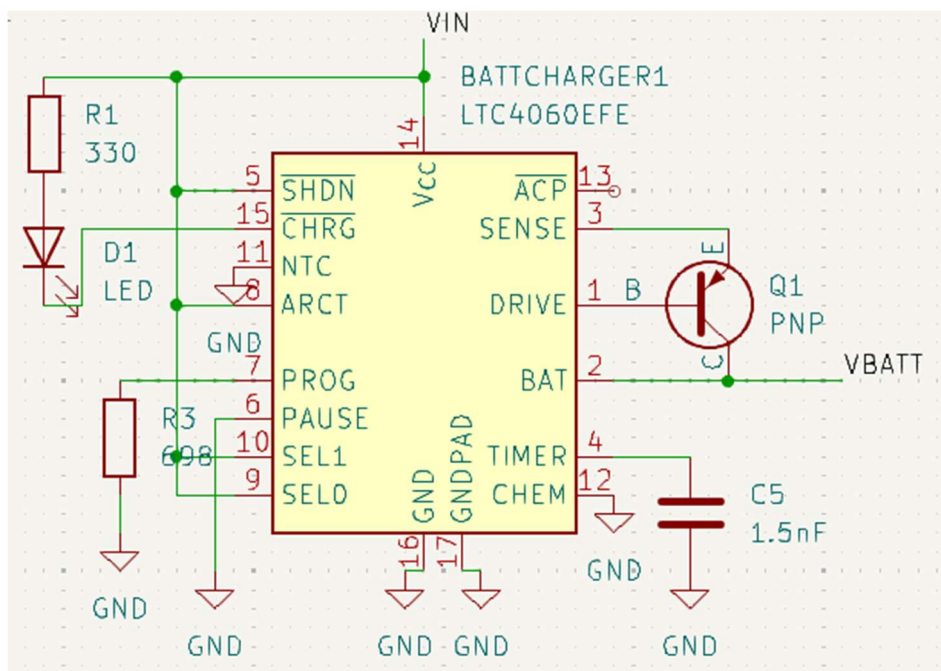


FSR UX 400 sensor

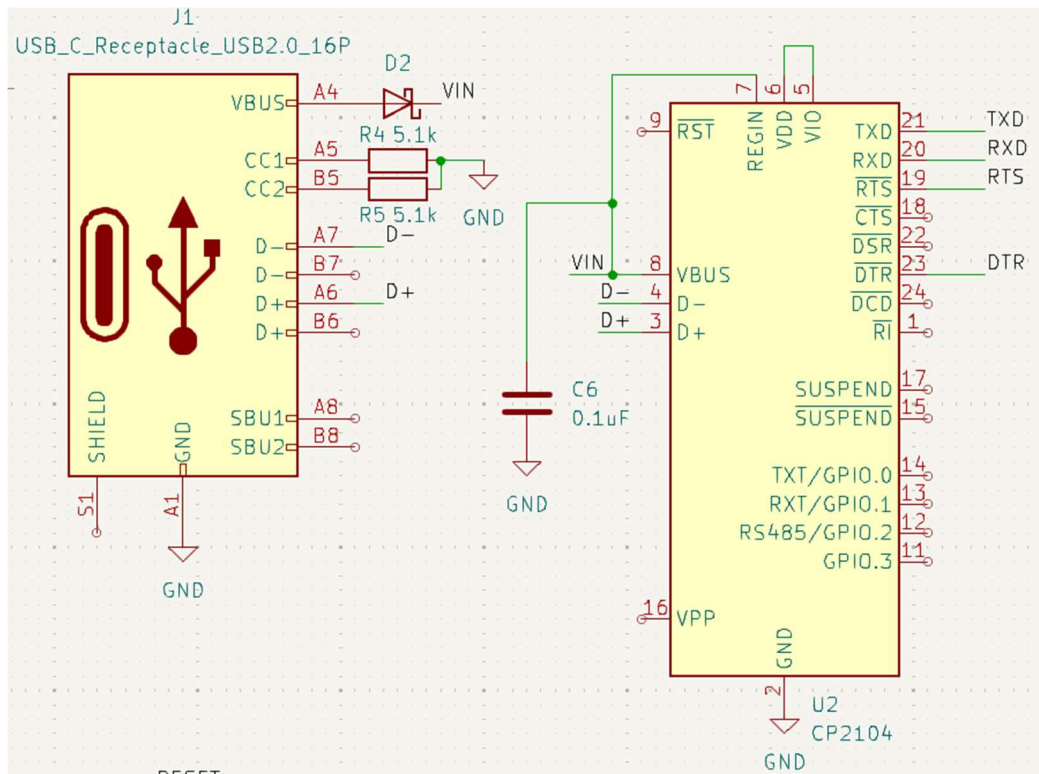
- PCB: Worked on linear regulators, battery charger, and programming circuit for ESP 32



Power schematic



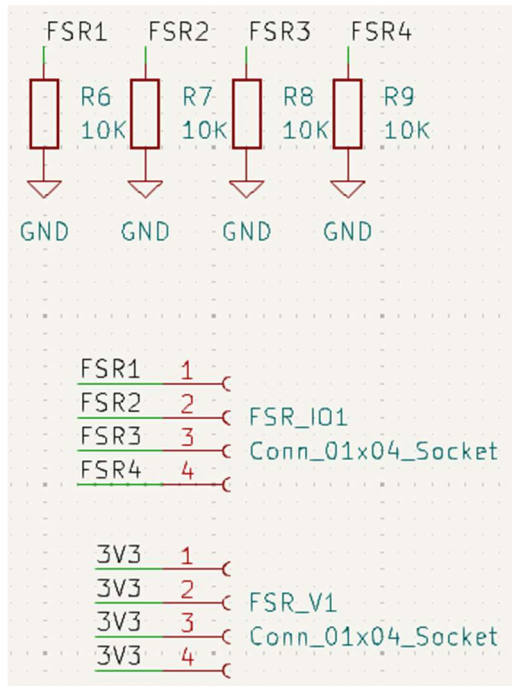
Battery circuit



■ Programming circuit

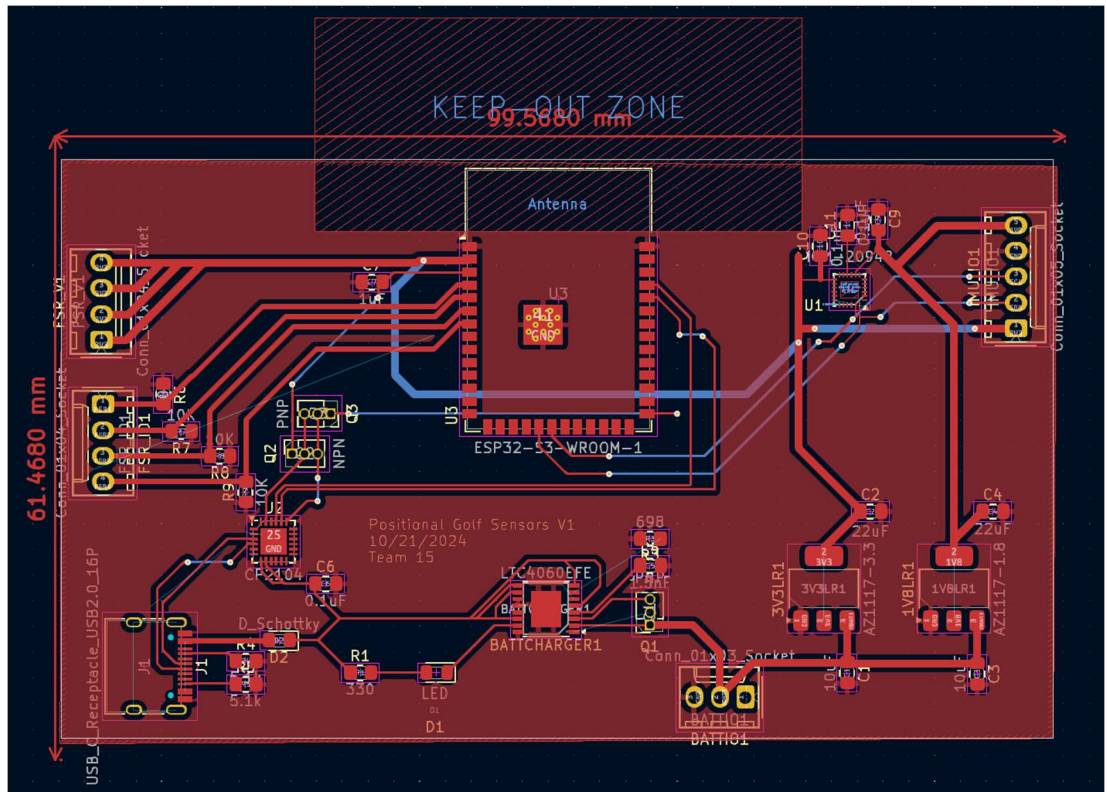
2024-10-13

- Finalized PCB Design on KiCAD schematic for first draft of PCB order
- Included voltage divider circuit for force sensors



2024-10-22

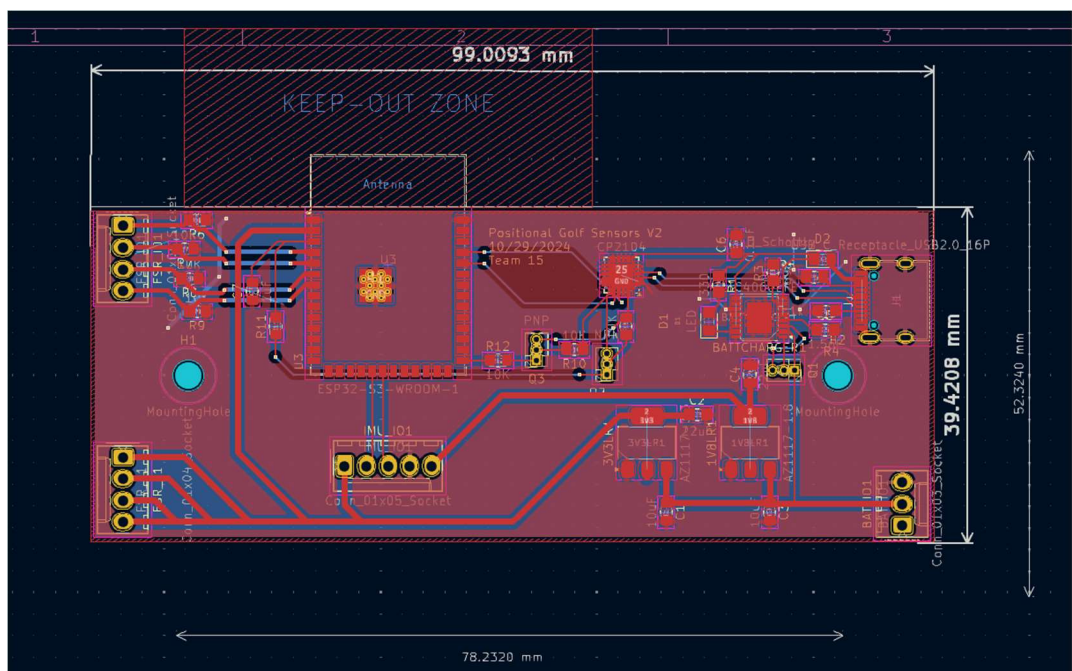
- Finalized choice of footprints for initial PCB order

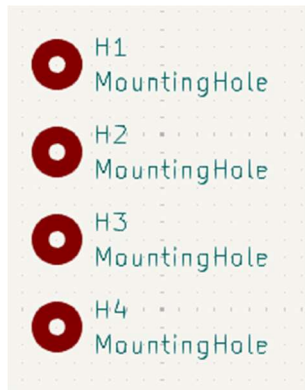


PCB for first order

2024-10-29

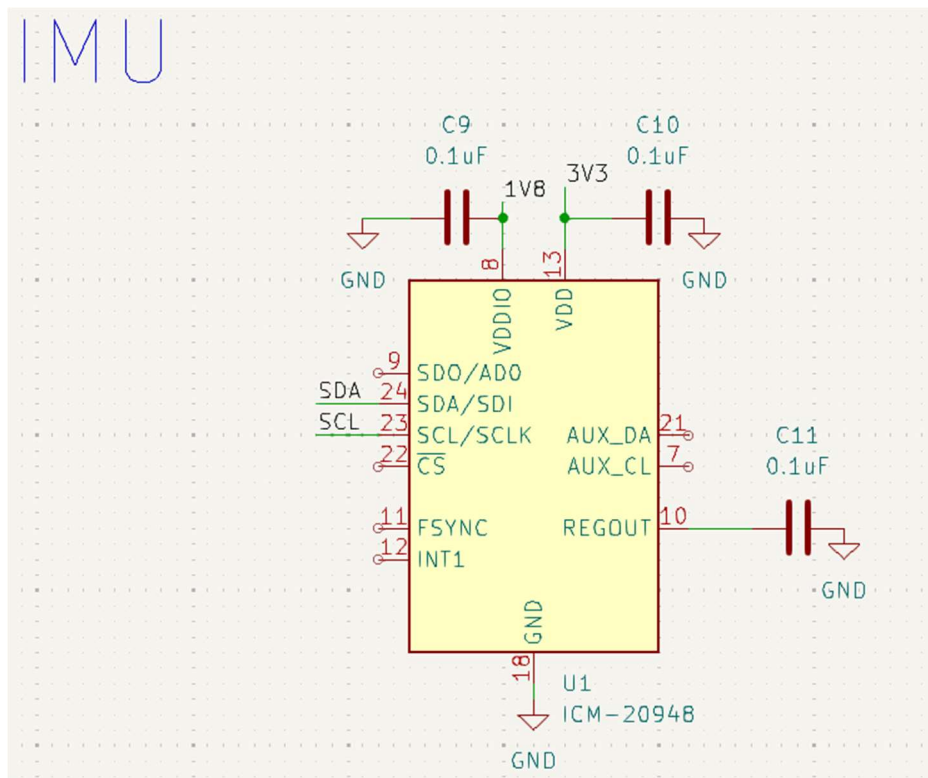
- Reviewing the initial design, we realized that the design did not have mounting holes → Added those mounting holes and redesigned the size such that the PCB will fit into the enclosure we will order for the third round

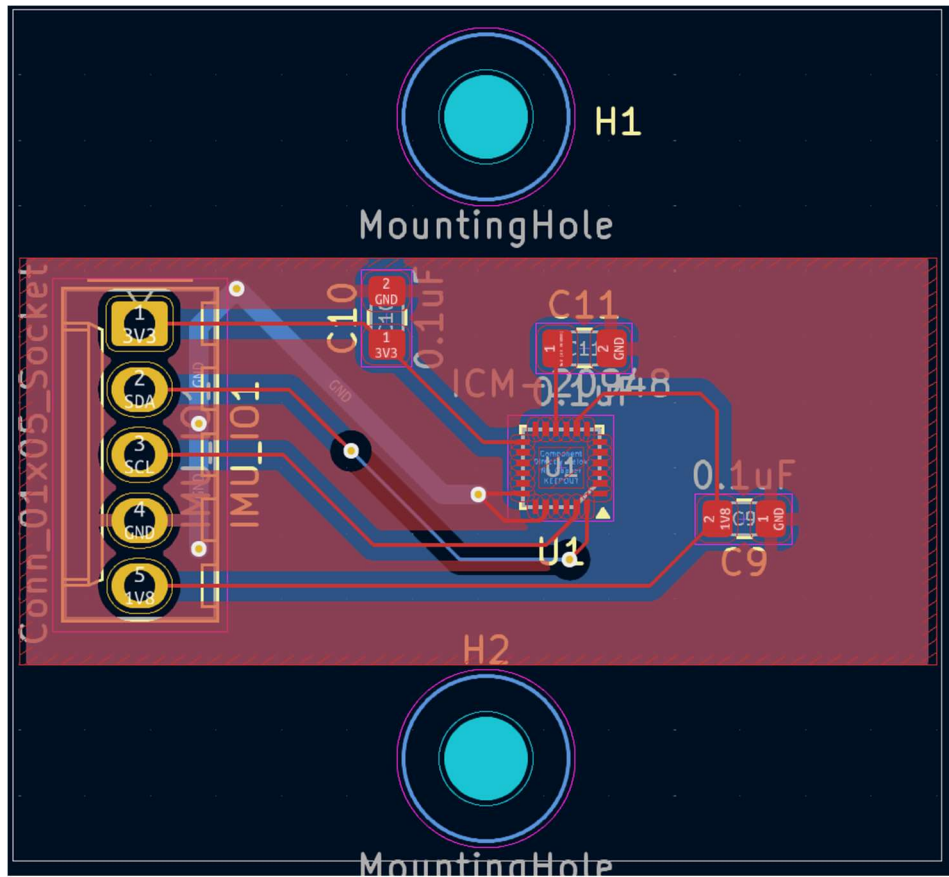




2024-11-04

- Round 4 of PCB ordering required for the IMU PCB we wanted to build separate from the MCU, since the IMU PCB will be near the face of the club, while the MCU PCB will be locked in near the middle of the shaft

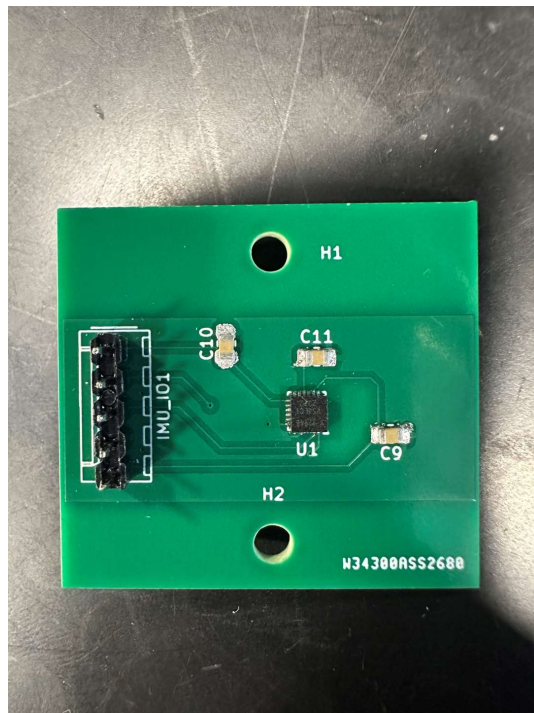
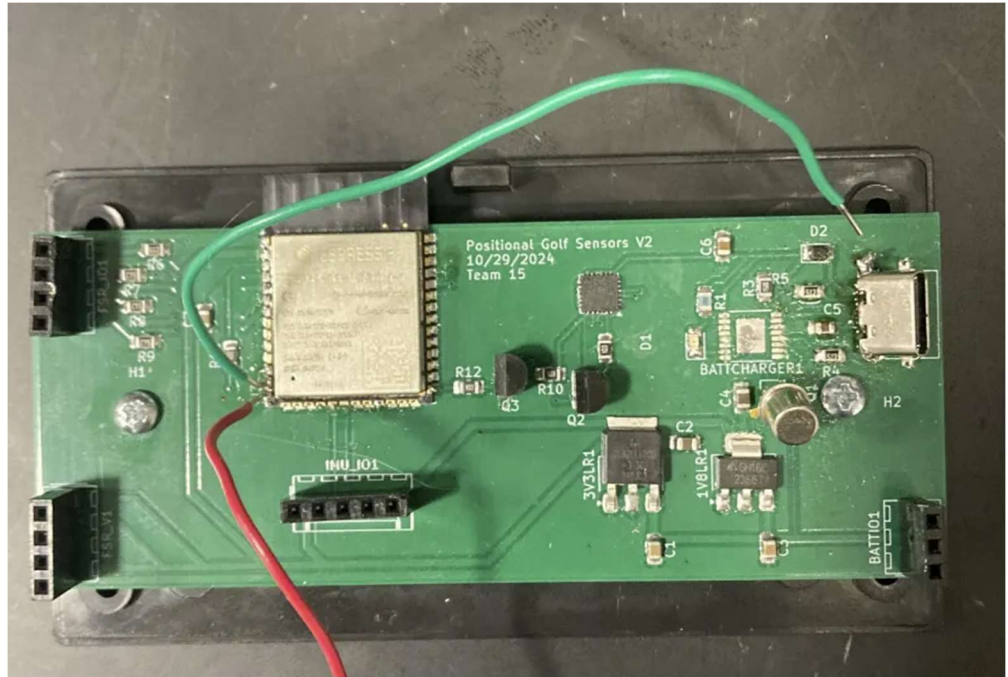




-
- IMU communicates with Serial Data (SDA) and Serial Clock (SCL) to the ESP 32. Included de-coupling capacitors.

2024-11-15

- Baked PCBs with the order to put parts on the PCB
 - Both MCU and IMU PCBs were baked

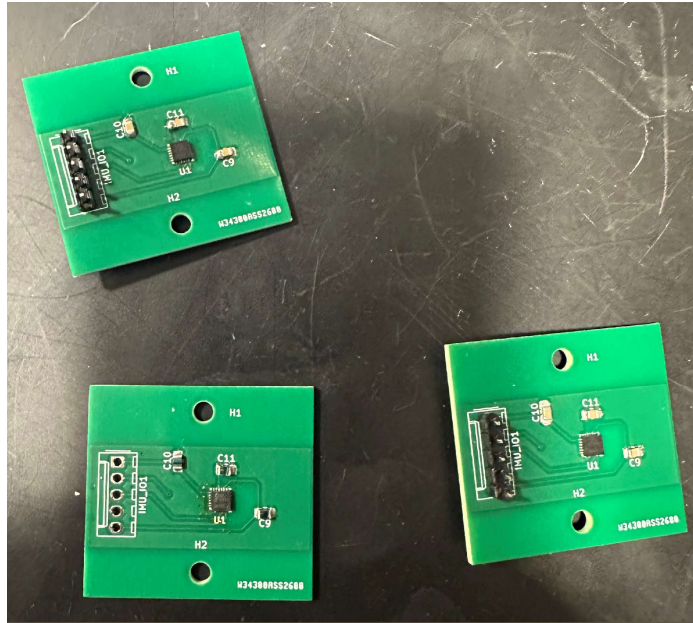


2024-11-21

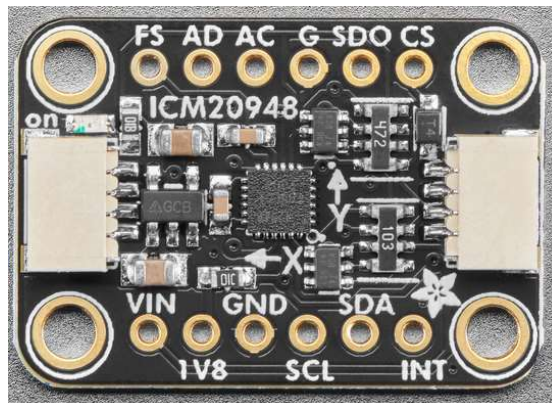
- Tested soldered PCBs, but did not have any outputs → attempted to remove bridging between components

2024-12-1

- The IMU still did not get any outputs, so I tried to make two more PCBs

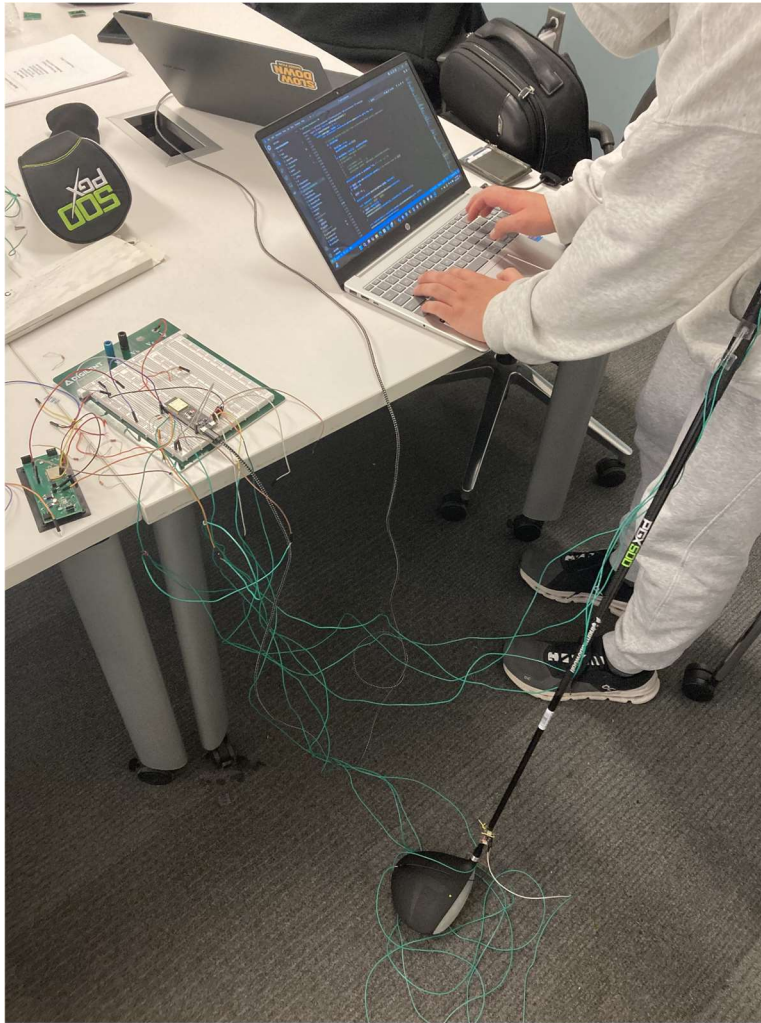


-
- Realized it was the interrupt pin left floating causing the IMUs from functioning → Had to use IMU breakout board



- ◆
- Connected the ESP 32 to school Wifi → Initially did not work, because code for Arduino could not interact with the SSID, and WPA secure connection
- Sent data from the ESP 32 and tried to store data in files of data collection every 5 seconds → Realized it was inefficient because we didn't need to store, but send directly to the mobile application

2024-12-3



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- Demo day → kept working on connecting force sensors and changing math for finalizing position in the application
 - After demo, realized force sensor output pins were ripped → reason why the force sensors were not reading any values