POA Internship

**Technical Considerations internship assignment Health Concept Lab**

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| **Technical Considerations** | | |  |  |
| **Part** | **(Expected) Function** | **Pros** | **Cons** | **Notes** |
| **Raspberry Pi 4** | **Main computer** | **All in one computer, good documentation, good software support** | **Chip shortage creates vulnerability for supply chain** | **The compute model 4 is not an easy alternative since there is no build in camera connector. The Raspberry Pi 4 model B seems the most suitable** |
| **TPS61158** | **LED driver** | **Flexible digital and pwm brightness control, 100:1 pwm dimming ratio, soft start build in** | **Datasheet unclear if there is a switching value of 750 Mhz or Khz** | **Mistakes in datasheet it seems, wrong frequency ratings** |
| **TPS6106x** | **LED driver** | **Pwm brightness control, digital brightness control, 1mhz fixed switching frequency** | **Made for multiple leds it seems, only 80% efficient** | **led disconnects during shutdown** |
| **TMC2209** | **Stepper driver** | **High quality, good documentation** | **Not yet found, maybe over specked** |  |
| **ST L297** | **Stepper driver** | **Reputable brand, low cpu usage** | **Expensive** |  |
| **Tmc2130** | **Stepper driver** | **The flag ship version of the tmc series** | **Expensive and overkill** |  |
| **Tmc2208** | **Stepper driver** | **Just as good as the 2209** | **higher impedance and so lower output amperage than tmc2209. It also has less features than tmc2209** |  |
| **DRV8870** | **H-bridge** | **Is able to supply 3.6A of current, enough for the peltier module most likely** | **Not the best option, a higher current version (6A) would have been ideal: DRV8874** |  |
| **IRL540SPBF** | **High load switching mosfet (logic level)** | **A logic level high mosfet that can handle very high currents (20A)** | **A little expensive** |  |
| **TPS61169** | **LED driver** | **LED current can be set with resistor** |  |  |
| **TPS92360** | **LED driver** | **LED current can be set with resistor** |  | **Seems the same driver as the tps61169** |
| **P82B96** | **I2C ESD protection IC** | **Galvanic separation of i2c lines which results in high esd level protection. One package saves all** | **A little more complicated possibly than using passive components. Expensive.** |  |