**Section 3 Hardware Details**

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Please provide:

1. Clear identification of components/devices (part numbers), as well as the supporting components required to get them to work, such as resistors and capacitors. Attach / give links to the datasheets.
2. Pin table: Which pins/interfaces of RPi/Arduino will be used, and how the various components/devices are connected to these pins.
3. Operating voltage level and current drawn by each component/device, and how your design takes care of these requirements.
4. Some idea of the algorithms / libraries you would be using to get these hardware to work (including links), or if you are writing own code, the relevant registers and configuration commands.
5. Identify all the subsystems in your prototype and estimate their power consumption.
6. Do the necessary calculations for battery design (ensure that you have the correct battery characteristics graph based on the type of your battery).
7. Some ideas on how you will be optimizing the hardware’s power consumption at runtime

Throughout, explain why you chose this design, adding references to prior research where appropriate.

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**3.1 Hardware list**

|  |  |  |
| --- | --- | --- |
| Components | Quantity | Additional Information |
| Raspberry Pi 3 | 1 | https://www.raspberrypi.org/documentation/hardware/raspberrypi/README.md |
| Arduino Mega | 1 | http://www.mantech.co.za/datasheets/products/A000047.pdf |
| SD card | 1 |  |
| ADXL335 Accelerometers | 2 | https://www.sgbotic.com/products/datasheets/sensors/adxl335.pdf |
| Flex Sensor 2.2" | 2 | http://www.sgbotic.com/products/datasheets/sensors/flex22.pdf |
| DUAL-USB Socket | 1 |  |
| USB Connector Socket A | 1 |  |
| Power adapter for Rasp Pi 3 | 1 |  |
| Breadboard | 1 |  |
| Veroboard | 2 |  |
| Current Sensor INA169 | 1 | http://www.ti.com/lit/ds/symlink/ina169.pdf |
| Level Shifter TXB0108PWR | 1 | https://learn.sparkfun.com/tutorials/bi-directional-logic-level-converter-hookup-guide |
| Power Cable for Arduino | 1 |  |
| HDMI to DVI cable | 1 |  |
| Wires | 1 bunch |  |
| Header pins | 20 |  |
| Plier | 1 |  |
| Wire Stripper | 1 |  |
| Cutter | 1 |  |

**3.2 Pin table**

**Raspberry Pi 3**

|  |  |  |
| --- | --- | --- |
| Pin | Connected to | Purpose |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Arduino Mega**

|  |  |  |
| --- | --- | --- |
| Pin | Connected to | Purpose |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |