Fabrication Instructions for the Mobile Sensor Platform

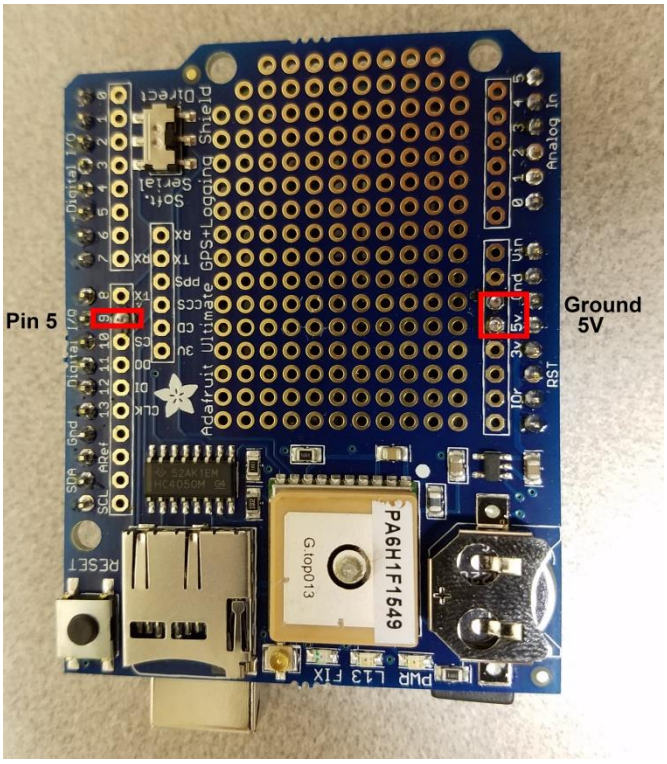
Materials required:

- Arduino Uno R3
- Adafruit Ultimate GPS Logger Shield
- DHT 22 temperature and humidity sensor
- 1k Ohms Resistor (x1)
- Lithium Ion 3.7V 1200mAh Battery
- Adafruit PowerBoost 500 Charger
- 2.1mm Male DC barrel connector
- On-Off toggle switch
- Red, Yellow, and Black wire
- Soldering iron
- Solder

Attach thermometer to GPS logger shield

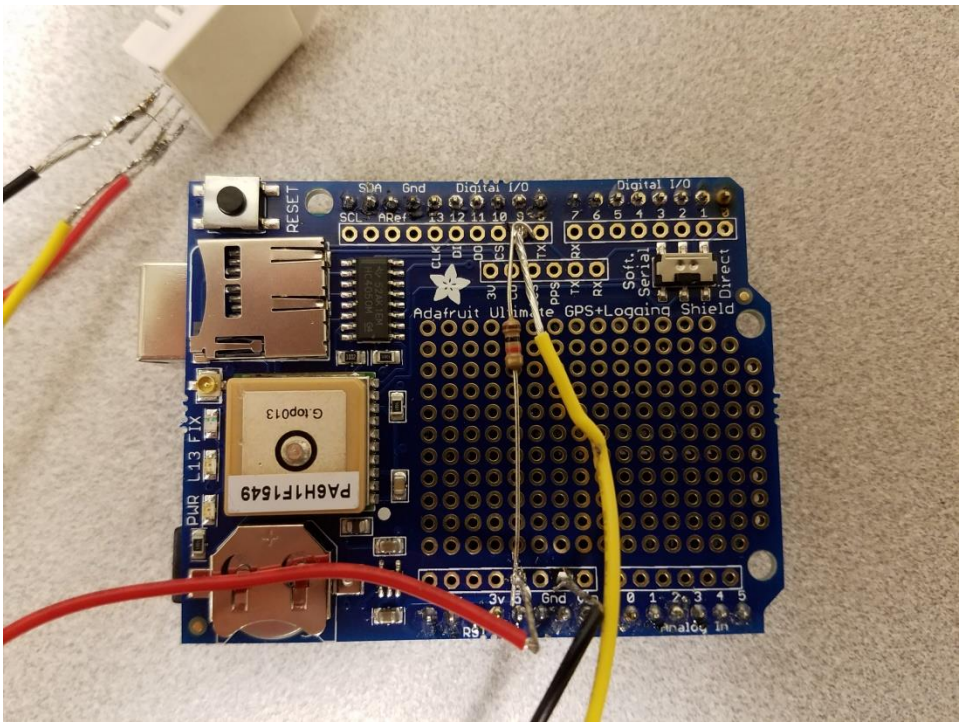
Begin by soldering a section of red wire to the 1st pin of the thermometer, yellow wire to the 2nd pin, and black wire to the 4th pin. The 3rd pin of the device should be left unused. The red wire will be the voltage input for the thermometer, so solder the red wire to the 5V pin on the GPS logger shield. The yellow wire delivers the digital signal from the sensor to the logger shield, so solder it to pin 9 of the shield. Finally, the black wire will be the ground for the sensor, so solder it to any of the ground pins – marked with “Gnd” - on the shield. The last step is to connect the yellow and red wires with the 1k Ohms resistor. The easiest way to do this is to solder one end of

the resistor to pin 9, where the yellow wire is connected, and the other end to the 5V pin where the red wire is connected.



Assemble the main board

To assemble the main board, insert the headers that came with the Ultimate GPS Logger Shield into the pins of the Arduino Uno. Seat the Logger Shield on top of the headers, making sure the headers fit into the outermost holes of the shield. You may have to wiggle the shield slightly to get all of the pins to fit, but you should ***not*** have to force the shield. Solder each of the headers to the GPS Logger Shield. Ensure that the switch on the shield is set to “Soft Serial”.



Assemble power supply

To the PowerBoost board, solder a section of black wire to the ground pin; this will provide ground to the main board. To the 5V pin of the board, solder a section of red wire that is about half the length of the black wire; this will provide the voltage to the main board. Solder the opposite end of the red wire to one of the pins of the toggle switch. Solder another section of red wire to the other pin of the toggle switch. Screw the end of this red wire into the positive terminal, marked with a plus sign, of the barrel connector. Do the same for the black wire into the negative terminal. Plug the battery terminal into the PowerBoost board; a blue LED on the board should light up. This indicates that the board is ready to use. To connect the main board and the power board, insert the barrel connector of the power board into the barrel connector of the main board.