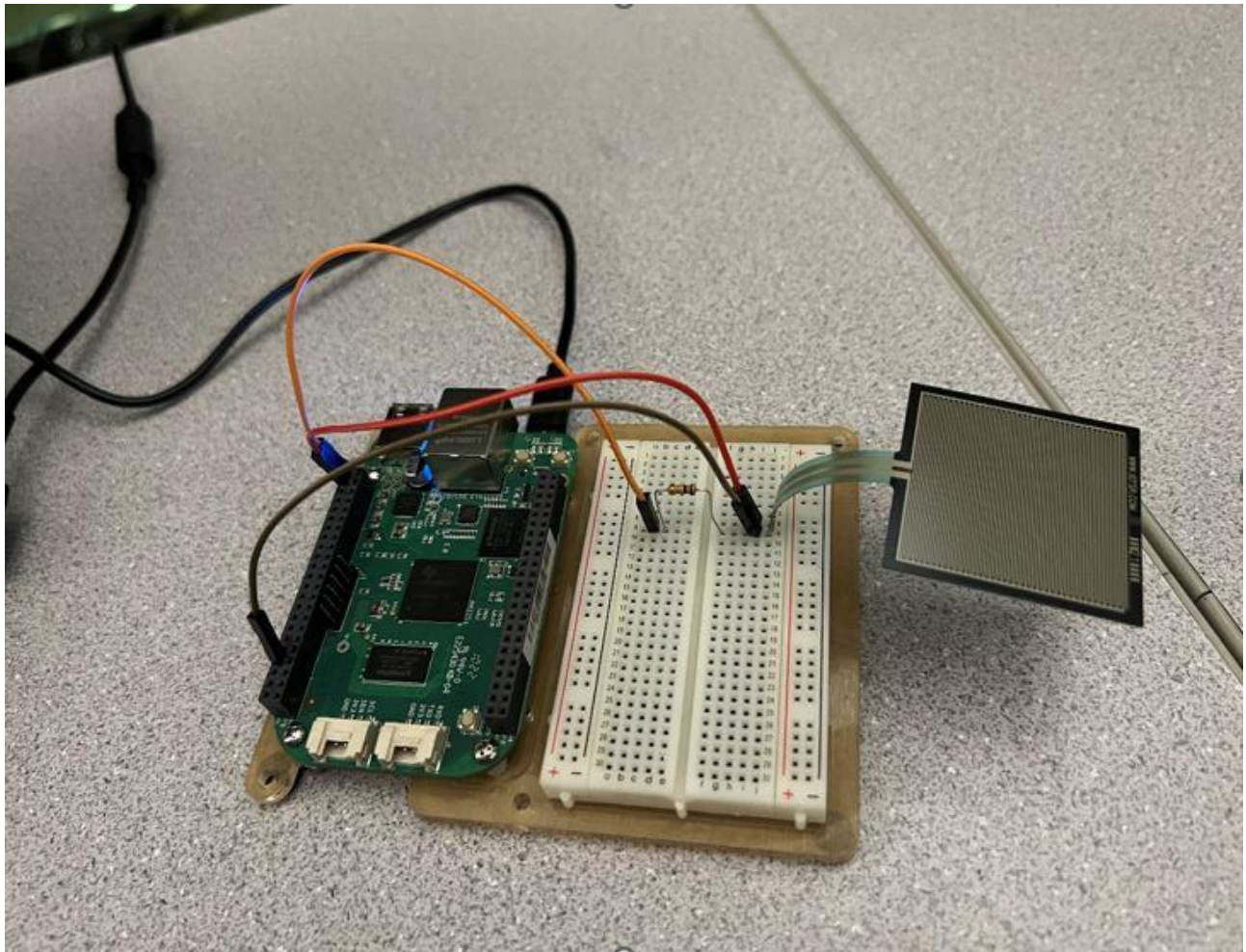


## How to Setup Adafruit Force Sensitive Resistor Sensor on Beaglebone green

The FSR sensor is very sensitive. Determine if it is applicable to your project. It detects force put on any part of the golden Square and outputs via A2D a voltage between 0 and 4095. It is not suitable to be used as a scale. The pins of the FSR are not shaped like normal pins. They fit in the breadboard but do not fit in female jumper wires. Polarity while connecting the pressure sensor doesn't matter as we can connect any of the pins to VDD or AIN pins. Below are the steps to follow:

1. Connect one of the pressure sensor pins to the desired AIN pin (P9.33, P9.35-P9.40) and then connect in series  $\sim 10k$  resistor with the GND (PIN 1 or PIN 2 on P9 Header of BBG)



2. Connect the other pin of the pressure sensor to any of the 3.3V VDD ( P9.3 or P9.4) on BBG.
3. SSH into the Beaglebone Green
4. Type `cd /sys/bus/iio/devices/iio\:device0`

- Depending on the AIN you connected to access the voltage value as follows (we use A0 as example):

Type `cat in_voltage0_raw`

- Depending on the pressure that is on the FSR, you will get a voltage value. Put your finger with some pressure on the FSR and read the voltage again and you should see that it is higher. If you are not able to read a value, check your connection again.
- Below is a simple C-Code function provided by Dr. Fraser that you can use in a C file to get the voltage reading. Before it make sure you

```
#define A2D_FILE_VOLTAGE0 "/sys/bus/iio/devices/iio:device0/om_voltage0_raw"
```

```
int getVoltage0Reading()
{
    // Open file
    FILE *f = fopen(A2D_FILE_VOLTAGE0, "r");
    if (!f)
    {
        printf("ERROR: Unable to open voltage input file. Cape loaded?\n");
        printf(" Check /boot/uEnv.txt for correct options.\n");
        exit(-1);
    }
    // Get reading
    int a2dReading = 0;
    int itemsRead = fscanf(f, "%d", &a2dReading);
    if (itemsRead <= 0)
    {
        printf("ERROR: Unable to read values from voltage input file.\n");
        exit(-1);
    }
    // Close file
    fclose(f);
    return a2dReading;
}
```

### **Troubleshooting:**

#### **No voltage reading in terminal:**

- Check all your connections as mentioned above.
- Make sure you are checking the correct AIN

#### **FSR voltage reading being too random:**

- Check all your connections as above
- Make sure there isn't debris on the sensor or something pushing on it unintentionally.

Note: We discovered that this is not suitable as a scale due to the sensitivity to slight movement and weight distribution. If you did choose to use it as a scale, make sure the entire weight is on the scale. Ideally the size of the part being scaled should fit within the golden part of the square. If that is not possible, mark the positioning to make sure you always have similar alignment. Simple physics statics analysis might be required in order to have the object balanced on a central axis.