Force Sensor

http://itp.nyu.edu/physcomp/sensors/Reports/ForceSensorResistor
http://learn.adafruit.com/force-sensitive-resistor-fsr/using-an-fsr

The sensor allows one to detect and measure the change in the applied force and also the rate at which the force is changing. It could detect contact or touch. Identify force thresholds and trigger actions. Its force sensitivity is optimized for use in human touch control of electronic devices.The FSR sensors have wide usage in the commercial and industry arena. The FSR can be applied to various fields such as industry, medical science, robotics, automotive, recreational and body pressure equipment.

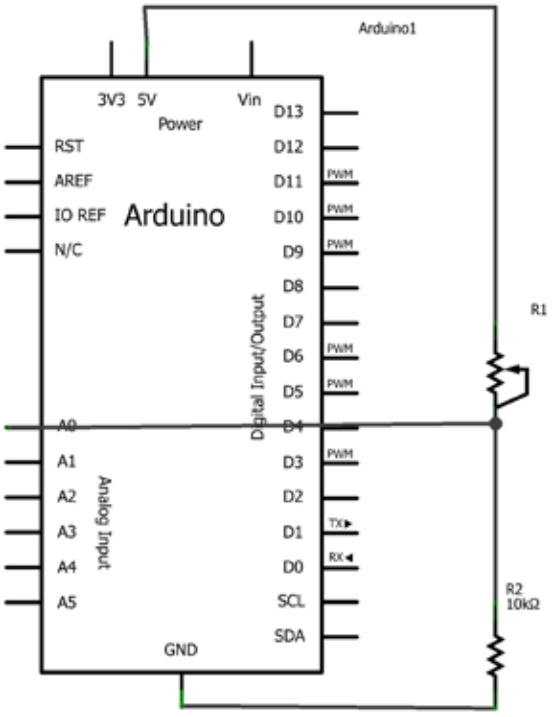
HARDWARE REQUIRED

Arduino Board
Breadboard
Pre sure Sensor (Force)
(1) 10K Resistor

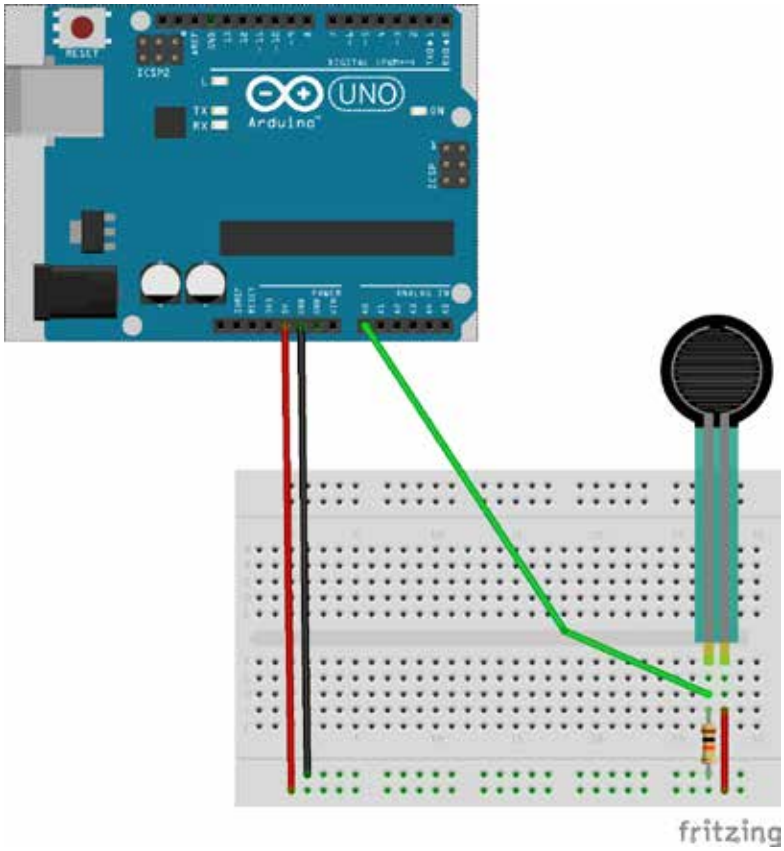
CIRCUIT

Parameter	Value
Size Range	Max : 20» x 24» / Min : 0.2» x 0.2»
Device Thickness	0.008 h x 0.050 h
Force Sensitivity Range	< 100g to > 10kg
Pressure Sensitivity Range	< 1.5psi to > 150psi
Part-to-Part Force Repeatability	+-15% to +-25% of established nominal resistance
Single Part Force Repeatable	+-2% to +-5% of established nominal resistance
Force Resolution Better than	0.5% full scale
Break Force	20g to 100g
Stand-Off Resistance	> 1M
Switch Characteristic	Essentially zero travel
Device Rise Time	1-2 msec
Lifetime	> 10 million actuation
Temperature Range	-30 degree Celsius to +70 deg C
Maximum Current	1mA/cm2 of applied force
Maximum Voltage	5V
Sensitivity to Noise	Passive device

SCHEMATIC



IMAGE



CODE

```
// Learn how to use Force Sensor form ITP tutorials
// http://itp.nyu.edu/physcomp/sensors/Reports/ForceSensorResistor

int sensorPin = A0;    // select the input pin for the potentiometer
int sensorValue = 0;  // variable to store the value coming from the sensor

void setup() {
  Serial.begin(9600);
}

void loop() {
  // read the value from the sensor:
  sensorValue = analogRead(sensorPin);
  Serial.println(sensorValue);
}
```

Force Sensor Resistor displays a decrease in resistance with an increase in the force applied to the active surface.
FSR is composed of 3 portions (Interlink Electronics Model No. 402).

Vent : The vent assures pressure equilibrium.
Spacer : The width of gap and fingers of the conductive grid.
Active Area : The area responds to force with decrease in resistance.
Tail : The area where the busing system terminates

At first, this sensor acts like a switch. It quickly goes from not being touched to feeling the force inflicted on it. From there on it continues to document the touch and it's particular force. It does reach a saturation point, where pressing harder is no longer detectable. It's a passive device since it starts out in a constant state that needs to be disrupted by the touch. It tracks the force applied to it instantly, I could not perceive a delay in the information sent. It's not affected by noise or vibration.