Flex Sensor

Detect changes on a flex sensor using an Arduino. This setup provides a non-invasive method of detecting movements of a resting subject.

The sensor is attached to an analog input of the Arduino which reports to the serial port any changes detected. The same information is encoded in 8-bits in pins 54 to 61 (A0 to A7) of the Arduino Mega or Arduino Due so that it can be fed to a data acquisition system such as the Digital Lynx and have it synchronized to electrophysiological measurements.

Principle of operation

Bending the sensor causes changes in resistance that are read at an analog input of the Arduino. If the sensor is placed in a cushioned surface, any forces applied to this surface will be picked up by the sensor. This can be caused every time that the subject adjusts their body weight, for example.
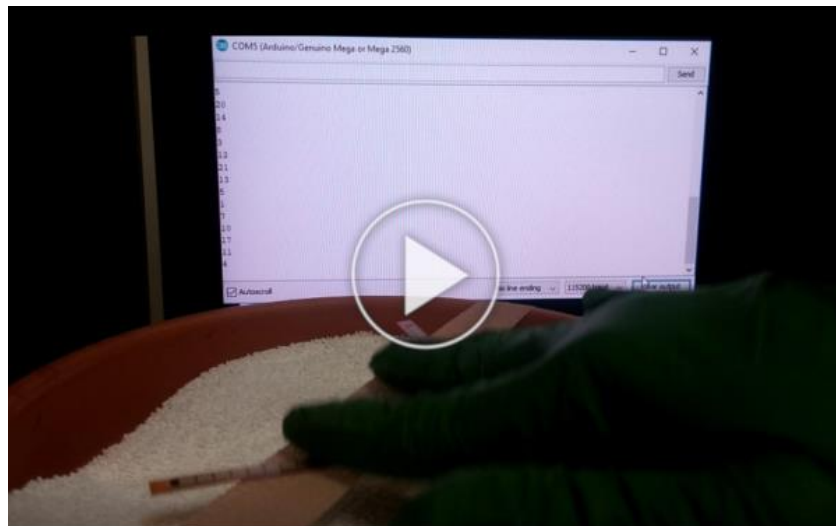
Prerequisites

- Arduino (last compiled and tested with Arduino 1.8.5)
- Arduino Mega2560 or Arduino Due
- Flex sensor
- 10KOhm resistor

Installation

- Install Arduino.
- Download and extract the project folder.
- Setup the flex sensor: Connect one end to +5V and the other end to the resistor to ground. The point between the resistor and the sensor connects to A8 (pin 62) of the Arduino. You may add a second flex sensor and connect it to A9 (pin 63).
- Plug-in the Arduino to the computer, upload code:
  - Open FlexSensor.ino
  - Select Tools/Board/Arduino Mega 2560 (or Arduino Due if using this board and having downloaded support from the Board Manager).
  - Select Tools/Port corresponding to board.
  - Click on Sketch/Upload

Usage example

https://drive.google.com/file/d/1NOsbR6badt6qm2y43nk8ZikhCGXgu5zO