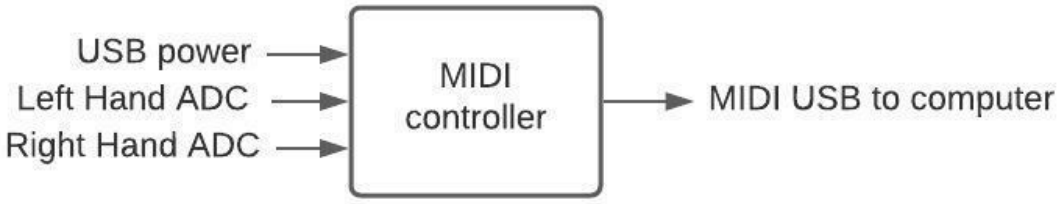
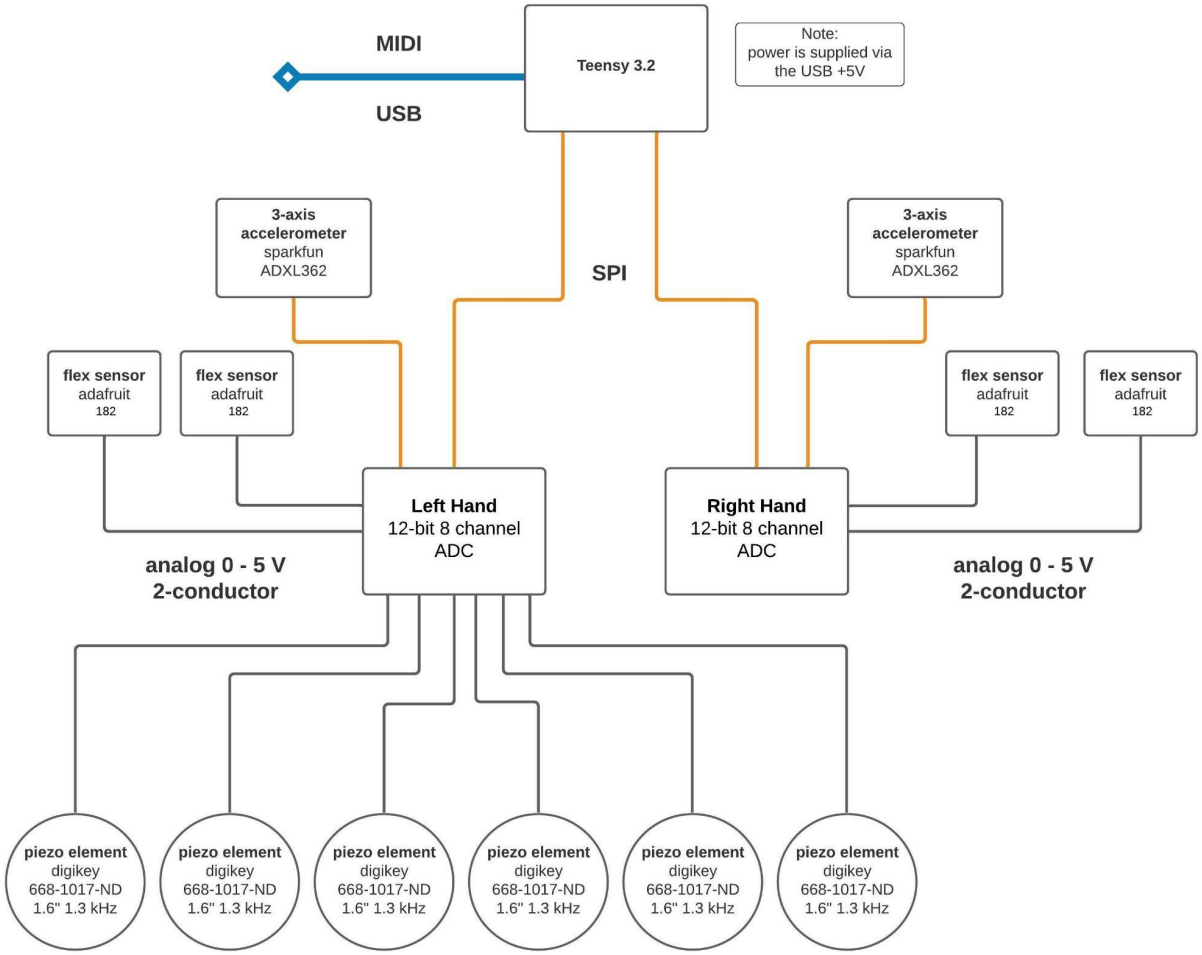
Team 5

Top-Level L0 diagram

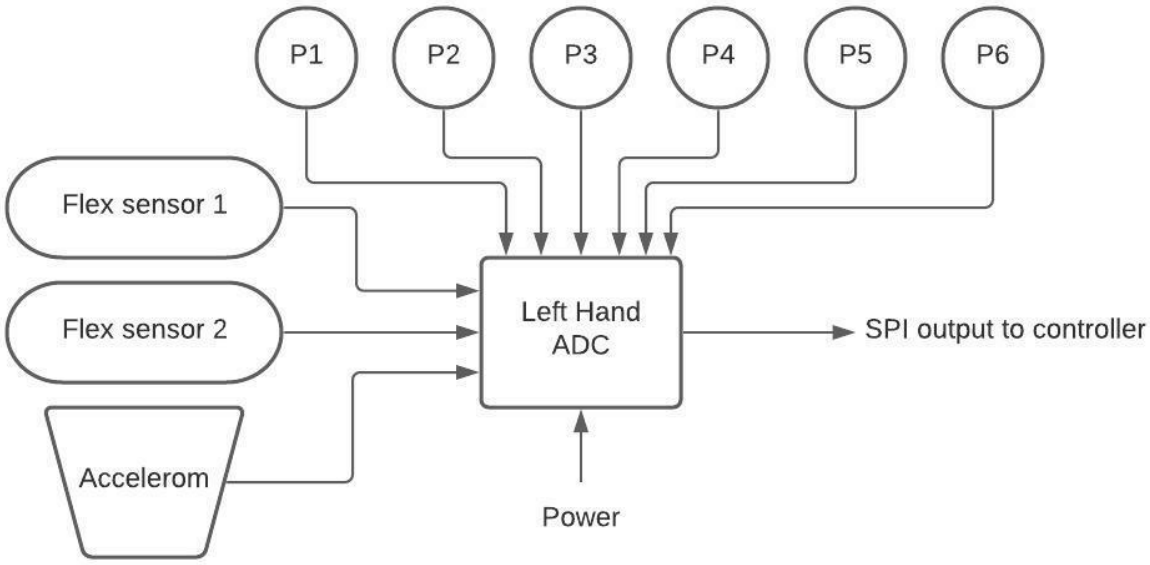


Module	Wearable MIDI controller
Input	Left and Right Hand ADC: The sensors distributed on each input sense the movement changes and send out corresponding signals. SPI input to Teensy controller. Power: USB Power: +5V, 150mA
Output	MIDI events through USB to the computer
Functionality	Translates hand movements into MIDI events for controlling a digital instrument on the computer

L1 diagram

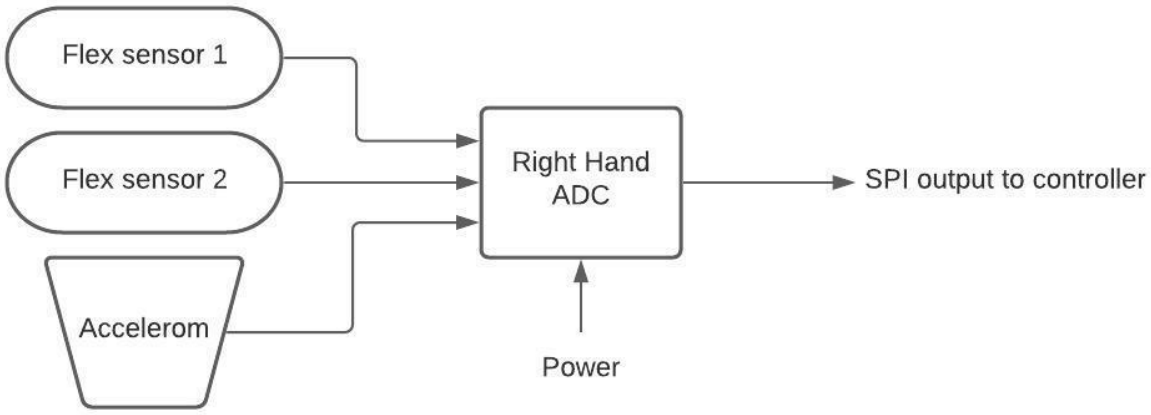

MIDI
USB
Teensy 3.2
Note:
power is supplied via
the USB +5V
3-axis
accelerometer
sparkfun
ADXL362
SPI
3-axis
accelerometer
sparkfun
ADXL362
flex sensor
adafruit
182
flex sensor
adafruit
182
flex sensor
adafruit
182
flex sensor
adafruit
182
Left Hand
12-bit 8 channel
ADC
Right Hand
12-bit 8 channel
ADC
analog 0 - 5 V
2-conductor
analog 0 - 5 V
2-conductor
piezo element
digikey
668-1017-ND
1.6" 1.3 kHz
piezo element
digikey
668-1017-ND
1.6" 1.3 kHz
piezo element
digikey
668-1017-ND
1.6" 1.3 kHz
piezo element
digikey
668-1017-ND
1.6" 1.3 kHz
piezo element
digikey
668-1017-ND
1.6" 1.3 kHz
piezo element
digikey
668-1017-ND
1.6" 1.3 kHz

Left Hand L0 diagram



Module	Left Hand Sensors
Input	Power: 3.3v from Teensy 6x Piezo elements: voltage spikes (under 3.3v) with threshold that triggers an event, and voltage level that sets an intensity, analog input to the ADC. Can be tapped to trigger an event. 2x Flex sensors (adafruit 182): each is set up in a voltage divider, output voltage is an analog input to the ADC. Measures how bent the index and middle fingers are. Accelerometer (ADXL362): SPI input to ADC. Measures tilt and acceleration of the hand.
Output	SPI output from ADC to Teensy
Functionality	Takes analog and digital input and translates it to digital SPI which is sent to the controller to be processed

Right Hand L0 diagram



Module	Right Hand Sensors
Input	Power: 3.3v from Teensy 2x Flex sensors (adafruit 182): each is set up in a voltage divider, output voltage is an analog input to the ADC. Measures how bent the index and middle fingers are. Accelerometer (ADXL362): SPI input to ADC. Measures tilt and acceleration of the hand.
Output	SPI output from ADC to Teensy
Functionality	Takes analog and digital input and translates it to digital SPI which is sent to the controller to be processed