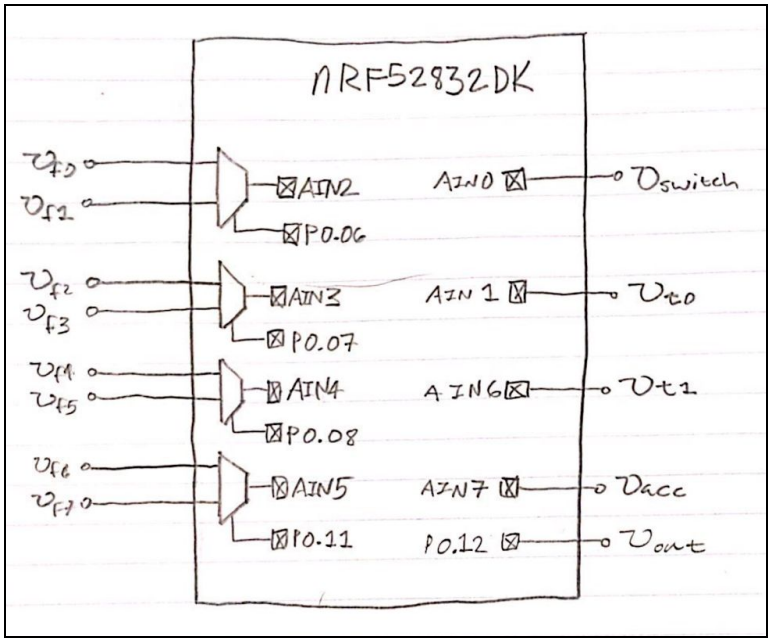
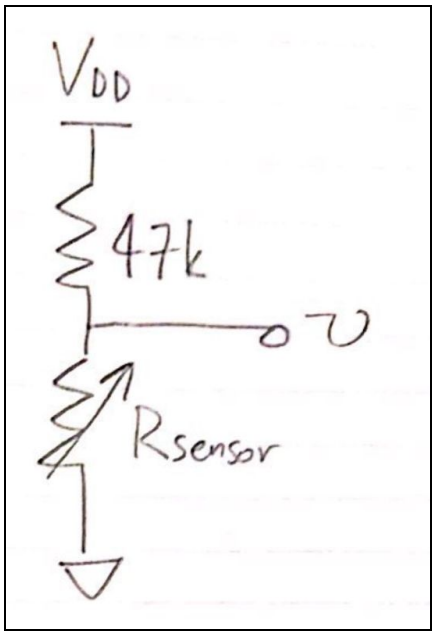
Architecture Drawing

nRF52832DK pins.



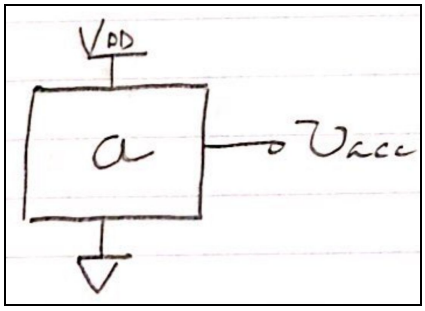
Note that we will be using 4 2-input multiplexers to select between 8 of our sensor inputs. Since we just have to get one reading from each sensor per cycle, this should not noticeably affect latency.

Circuit diagram of each flex sensor.

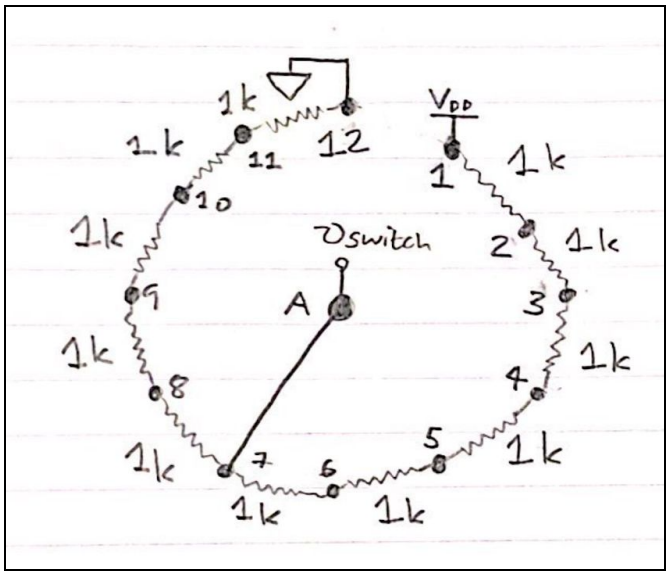


Note that the sensor is represented as a variable resistor.

Very simple diagram of the analog accelerometer.

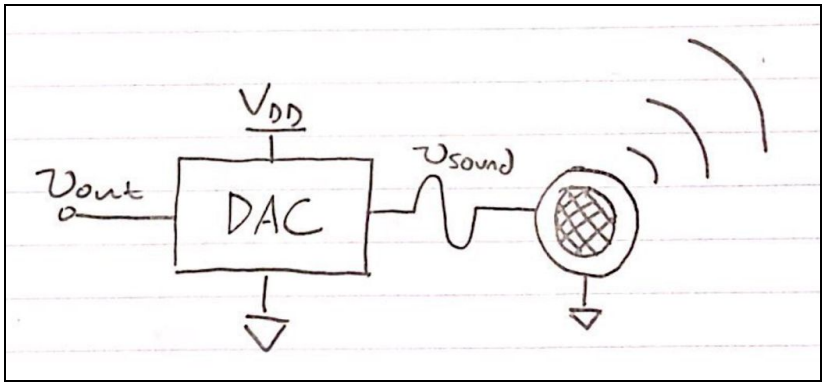


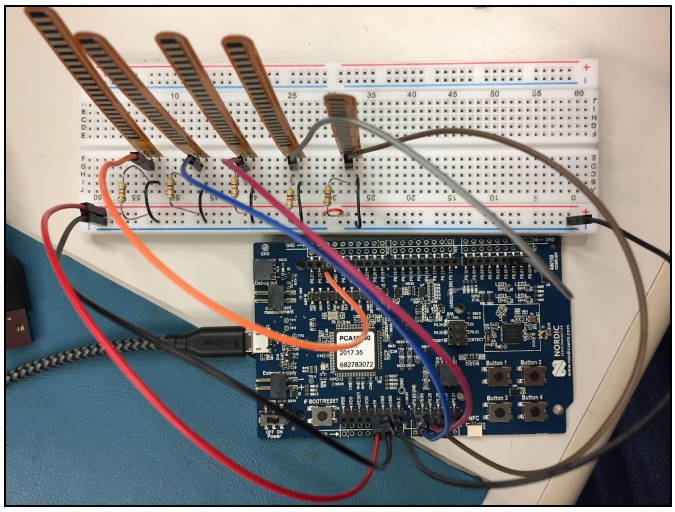
Circuit diagram of the 12-way rotary switch we will use for key changes.



Note that v_{switch} can be one of 12 possible voltages.

Serial DAC to analog speaker.





Progress

So far, we have been learning more about the flex sensors. We have written a calibration function (in main.c in our GitHub repository), which simultaneously calibrates each sensor. We have also finalized the specifics of how our gloves will function (readme in our GitHub repository)

Modification to Goals/Scope

- 4 fingers on both hands to play 8 notes (as opposed to having 1 hand)
- Thumbs as pitch bending
- Rotary switch to choose key before playing
- Only play chords in key

List of necessary resources

- Speaker + DAC
- Rotary Switch
- Solder Breadboard
- I2S driver for https://www.adafruit.com/product/3006
- Expertise on how to power the device

Schedule of remaining time

- November 13 - sound properly outputting for one note at a time
- November 26 - chords, timing is good, flats and sharps, switching keys
    - Meghna - pitch bending w/ thumbs, keys with rotary switch
    - Neha - timing & interrupts
    - Henry - chords
- December 5 - add haptic feedback (maybe) and have it powered without being plugged in
- December 11 - Project Presentations and Final Demos

- December 14 - Project Report Due

Identification of major risks

- Playing multiple notes at once (for chords) will be difficult to implement
- Integrating sound
- Have limited number of analog inputs
- Rotary switch settings may be difficult to tell apart