Week 6:

John and I were split on how to progress forward with the MIDI handling. I wanted to continue working with PyAudio to try and see if previous problems noted (having to cut the audio file midway to create notes with reasonable play/release latency) could be fix. John however wanted to utilize pyFluidSynth to play the notes. While pyFluidSynth would solve most of our issues without complicated coding solutions, the issue was trying to create the SF2 sound font file from the starting point, which is a WAV file produced by the neural net. In the end, however, John was able to find python code capable of converting a WAV to SF2 using a two step process, first by converting the WAV to a SFZ file, then from an SFZ file to an SF2 file. It turns out the simple solution was a good one, and I abandoned my intentions to try and work with PyAudio.

Week 7:

This week was poster presentations. We eventually designed a render using solidworks to model a possible future design for a standalone synth device utilizing a teensy connected to potentiometers and computer keyboard keys to send MIDI commands to a Raspberry Pi. Unfortunately, while we did use the design for our poster, this idea proved to not align with our eventual goals. Computer keys are not pressure sensitive, so using them would mean playing all notes at a uniform volume. In addition, using multiple keys for microtonal use would still require a specified frequency for the microtone. Attempting to form a more continuous range of notes is difficult due to how MIDI operates – it displays discrete values for manipulation. However, using a fader as a frequency shift option would allow for more fine-tuning of any note.

Week 8-9:

I received news on the day of the poster session that my grandfather passed away. I stayed for two or so hours to present, then went home and took a break from everything for two weeks to recover.

Week 10:

My goal was to take the changes in week 6 to utilize pyFluidSynth and make sure it runs on a Raspberry Pi as opposed to a laptop. There were difficulties in trying to establish the FluidSynth and the pyFluidSynth libraries as the Raspberry Pi pip module could only install very outdated ones that did not have functionality used in the code available yet. Eventually, however, I was capable of running the program on the Raspberry Pi. A test run at school proved that the Raspberry Pi was capable of similar functionality as a laptop when connected to speakers and the MIDI keyboard. There is more delay compared to an actual laptop between a key press and a sound output, but otherwise it was more or less functional. Having completed a base prototype, we considered our work for this semester completed and proceeded to focus on other classes.

Week 12:

Semester end presentations, final reports, and this progress report.