MIDI Pitch Bend and Modulation Controller - Danny Taki

Team Members

- Danny Taki (dtaki2)

Abstract

Many music synthesizer keyboard controllers have physical controls on the lefthand side of the keyboard for pitch bend and modulation. There are two main form factors for these controls: a pair of "wheels" that rock back and forth (with the pitch bend wheel centered with a spring), and a single joystick that moves in two dimensions, typically with the x-dimension controlling pitch bend and the y-dimension controlling modulation. Some keyboards, such as digital pianos and smaller MIDI controllers, do not have these controls. The goal of this project is to create a small device that can be placed on top of or alongside a MIDI keyboard to add pitch bend and modulation functionality via force sensitive resistor sensors.

This project is a continuation of a prototype from ECE395 SP18, in which I had a breadboard prototype working (and later disassembled). I had the ECE shop create a PCB, but I made a few footprint errors, so I will be re-doing the PCB design for this semester and going through PCBWay. I also only had MIDI output working on DIN connectors, so this semester I hope to have MIDI IN/THRU working, as well as USB MIDI.

Project Goals

First Demonstration:

Complete a breadboard prototype that has both MIDI IN and OUT working on DIN connectors. At this point, the controller should be able to connect to a hardware synthesizer and keyboard controller and "work" as a standard pitch bend and modulation controller.

Second Demonstration:

Add USB-MIDI functionality so that the device can seamlessly communicate with software synthesizers. Add controls and software code for setting the pitch bend range (so that, for example, the pitch bend down sensor can bend down an octave and the pitch bend up sensor can bend up a whole tone).

Final Demonstration:

Have a PCB produced and an enclosure created, such that this demonstration shows a more or less finished product that one could take with to gigs or into the studio.

Tentative Schedule

Tuesday: 2:00PM - 5:00PM
Wednesday: 12:00PM - 3:00PM
Friday: 12:00PM - 3:00 PM

Final Report and Project Files

No files shared here yet.