

Bluetooth Expression Control
Final Assignment
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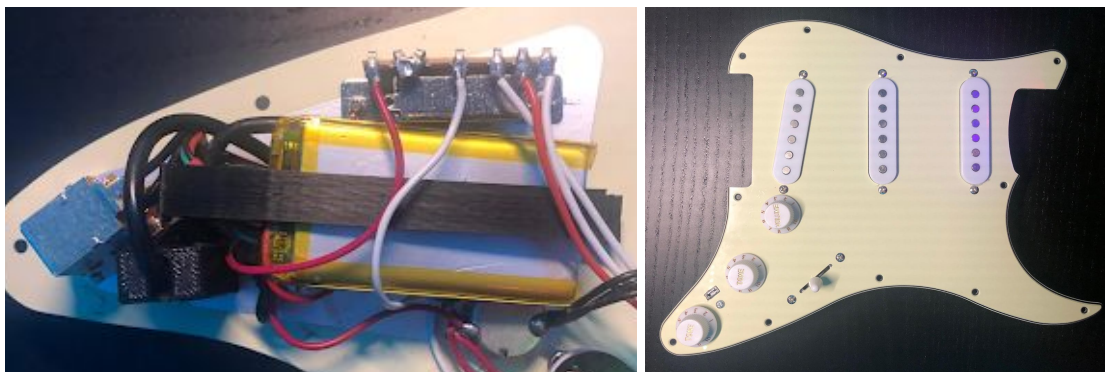
The goal of this project was to simulate the control of an EV5 expression pedal's input in a Boss DD8 delay pedal. Our sponsor for the project, Michael Eisenstein, wanted to control an effect on the Boss DD8 pedal over bluetooth with a potentiometer installed inside of an electric guitar.



The documentation on GitLab specifically the "READ ME" gives definitions and reasonings on how the project works and future improvements. It also has many pictures and step by step instructions for how to install the board in the guitar.

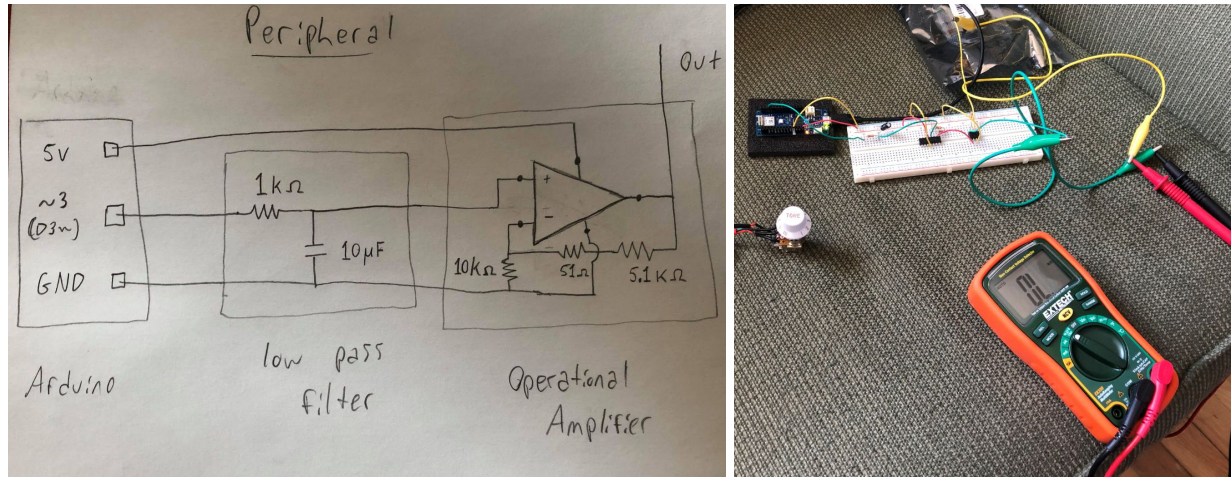
Our way to accomplish this goal was to design two different boards, a central board and the peripheral board. We used two Arduinos communicating over bluetooth low energy.

The central board is seated under the pickguard of an electric guitar and sends values between 0-255 from the potentiometer. This board is composed from a potentiometer soldered to the arduino with a battery connected. This allows for the board to be powered remotely while underneath the pickguard. We had to design two special mounts and have them 3D printed to mount the charge port and central board to the underside of the pickguard.



The second Arduino relays the potentiometer signal to the Boss DD8 via standard audio jack (TRS cable). We currently

have the peripheral board outputting a voltage ranging from 0-3.3 volts. This is known as a controlled voltage pedal which is also quite common in the music industry. Unfortunately the Boss DD8 pedal does not function with a controlled voltage. Throughout this project we used different electrical components to try and convert the output voltage to a resistance value. We tested an optocoupler however we weren't able to get it to work for what we needed. We believe the right way to solve this problem is to use a mosfet. The gitlab readme document has more detail on our testing with the optocoupler and how to use the mosfet.



Currently we have finished developing the transmitter that will be embedded in the guitar behind the pick guard however we could not finalize to finish the EV-5 emulator for the pedal as it requires a voltage controlled resistance (VCR circuit) and did not have enough time to order parts again or to keep testing.

Overall, we made great progress on the emulator and transmitter and have run into our fair share of road bumps. The ultimate goal is to have the peripheral board output a varied resistance to the Boss DD8 pedal. Based on all the documentation/ research we have done on the gitlab we hope the next group will be able to finish the project in its entirety.