HarmonEase

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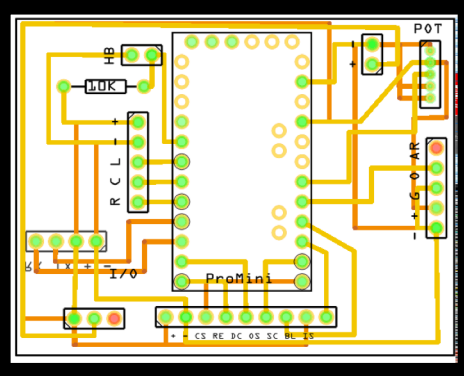
Problem Statement

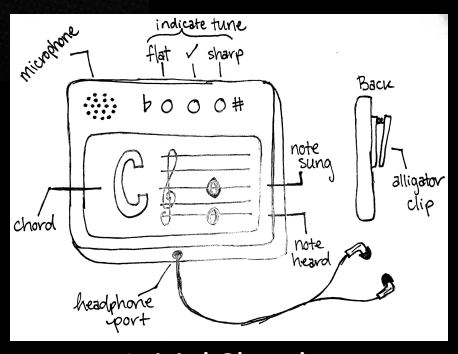
Harmonizing is difficult to learn and it can be hard to know whether your harmony is in tune with the melody.

Proposed Idea

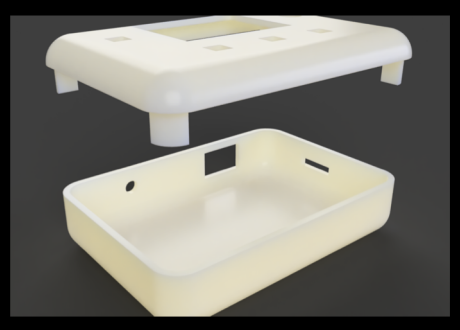
The Harmonizer is a handheld device that allows amateur singers to practice harmonizing with a given note or melody line. It will play a note for the user, display the note being played and the note that must be sung, and use a microphone to rate the attempted harmony as either sharp, flat, or in-key.



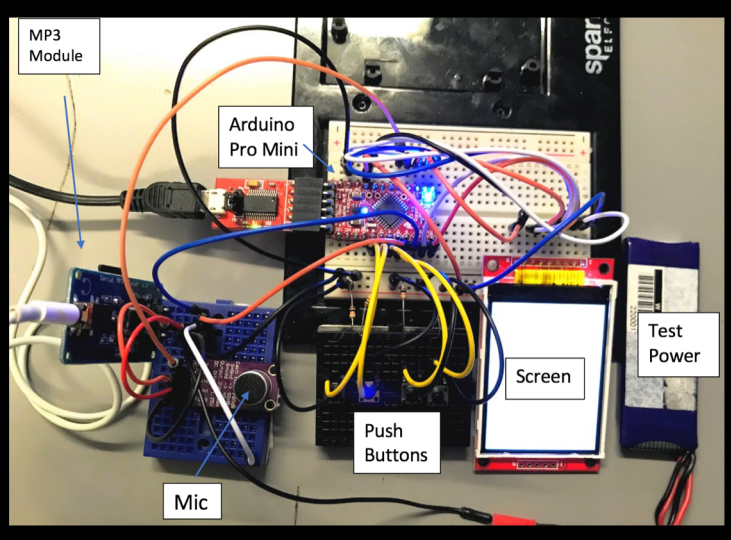
PCB Board



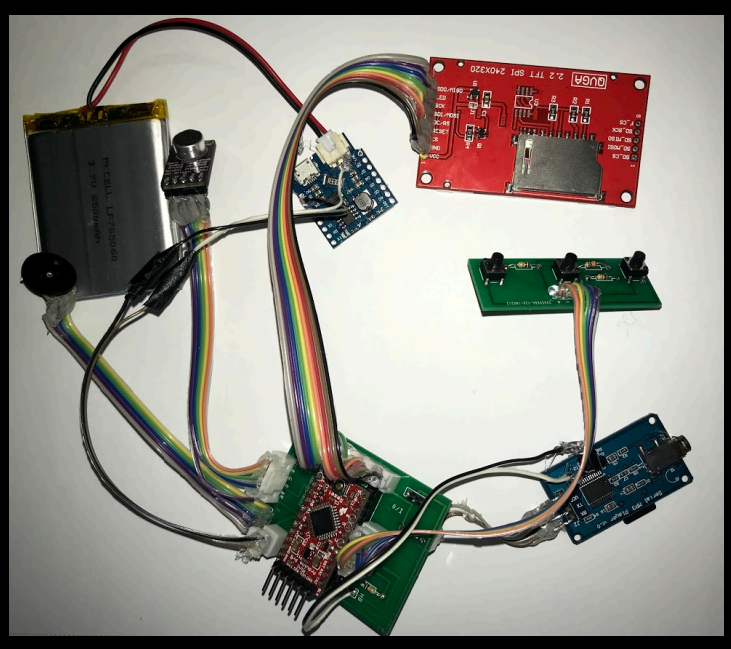
Initial Sketch



3D Case Design



Hello World Bread Board



Soldered Components

This semester long project was brought from concept to creation through an extensive design process. It began with initial form sketches of what the device might look like. Next, specific parts and functions were chosen, purchased, and assembled on a breadboard. After writing some hello world code and testing it out on the breadboard, PCB's were designed and ordered. While waiting for the boards to come in, cases were designed in Fusion 360 and 3D printed. Once the boards were in, all components were soldered together and the code was finalized. Lastly, form and function were brought together for the final product!