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Programming and electronics
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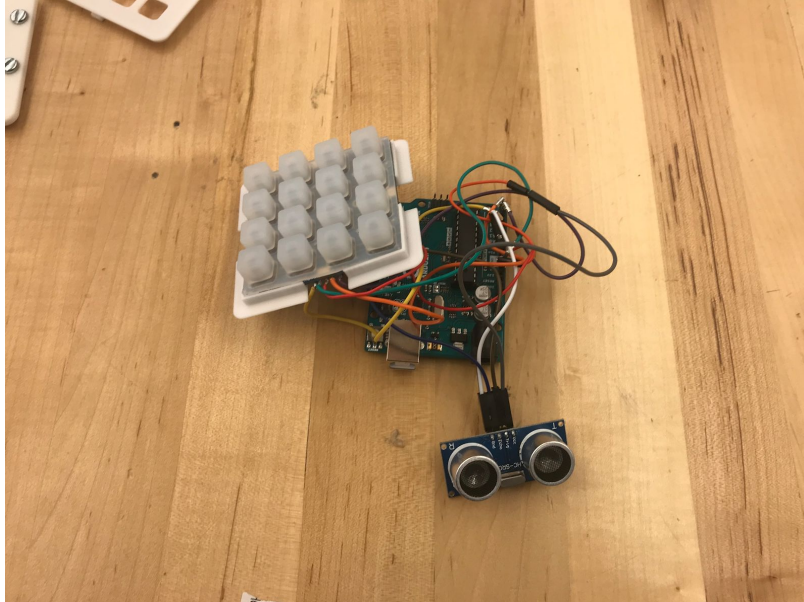
The final project I have done it is a trellis with lightening buttons, I use the rhino to open the 3D model than using the 3D printer to print out. At first, I The purpose of making this project is for helping the gamer to practice press the button for improving hand speed in game playing. Also, you can record your time for pressing the certain number of buttons to see your improvement after practicing.

It is basically a lighten pad trellis that has 16 buttons on, the main concept of this project is

- 1)figuring out how to use the distance sensor control the led light up.
- 2)how to let the lights off by pressing the button.
- 3)creating a game the users can play by themselves and also compete with other people.

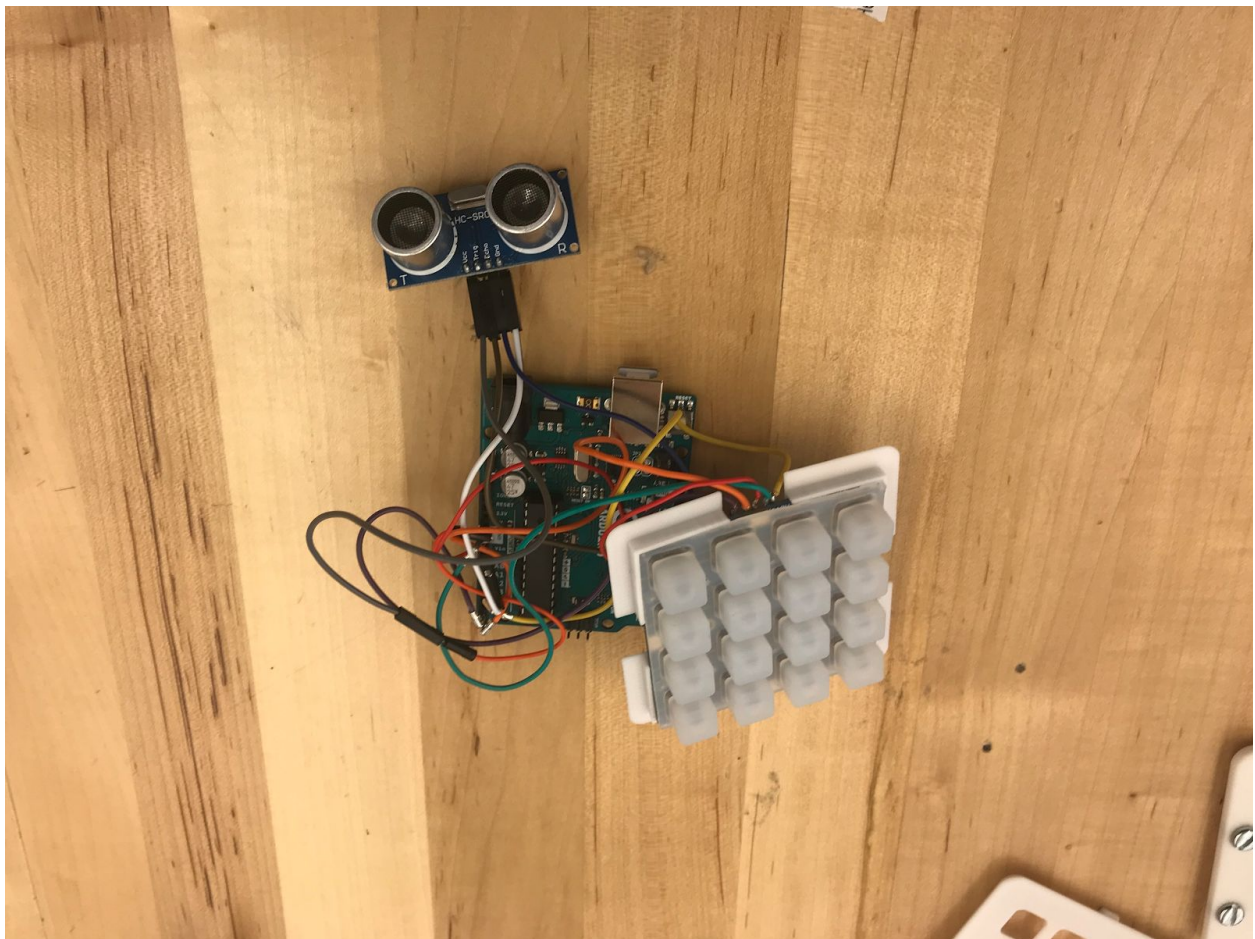
For tools and electroic components I worked on are

3D printer
3mm LEDs
Male Wires& Female wires
Arduino uno
trellis
USB cable
elastomer keypad
Ultrasonic Sensor HC-SR04



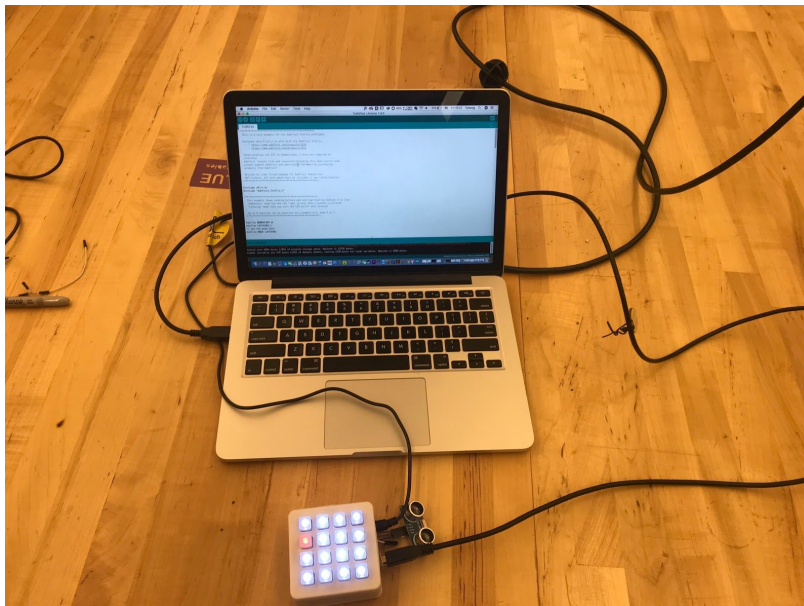
the close look of Arduino UNO

and the elastomer keypad





The components set up



Playtest set up

The final project I have done it is a trellis with lightening buttons, I use the rhino to open the 3D model than using the 3D printer to print out. At first, I was struggling with soldering the reason is that I felt it is hard to control my hands to hold the lead make sure it won't move. Another challenger is when I first I try to connect the Ultrasonic Sensor HC-SR04 and buzzer to the Arduino but finally I found that the buzzer sensor doesnot make sense with the lighten keypad because it will be really noisy that lower the user's experience. But the distance sensor would help, so I set when you hand hover around the sensor all the button will be light on, I did a few iterations to test how far should your hands away from the sensor show the best result. Finally I did a video test show that how to play the game, the person in my video try to light off 48 buttons, he presses the time record in his phone then start it, when you finish light off 48 buttons he press the stop, them how many time he used will be showing on the phone. He told me it is helpful and interesting for the gamer to practice hand speed.