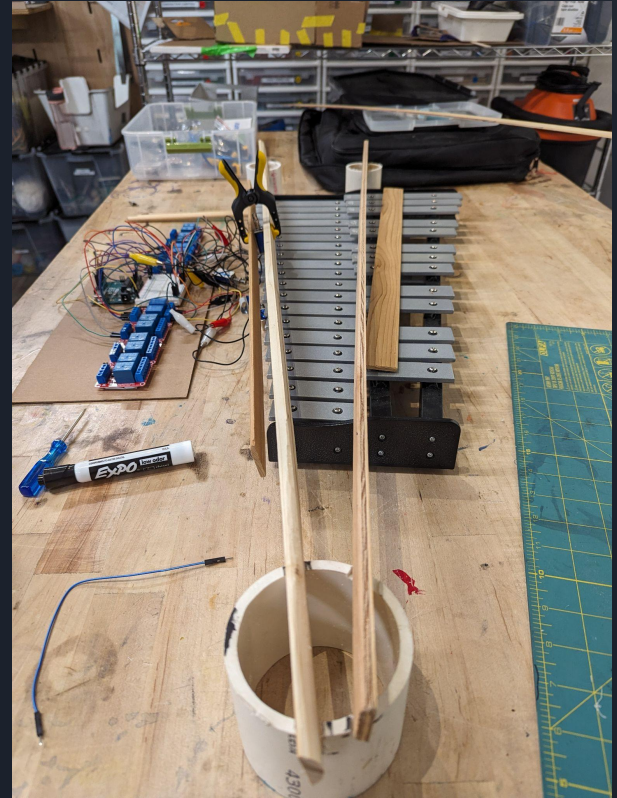


Piano Playing Robot

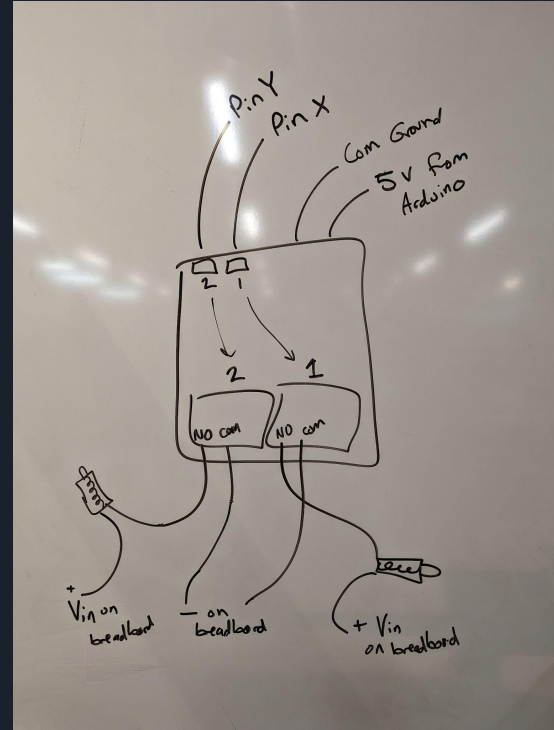
Conor Byrne Spring 2024



How does it work?

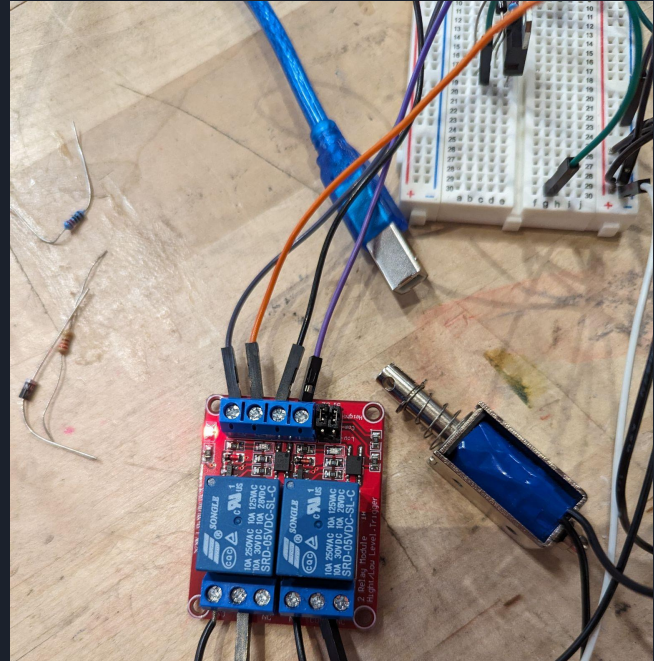
This piano playing robot plays the piano by using solenoids to press on the different keys.

These solenoids are controlled by an arduino which uses a program I made to choose what signals to send at what times

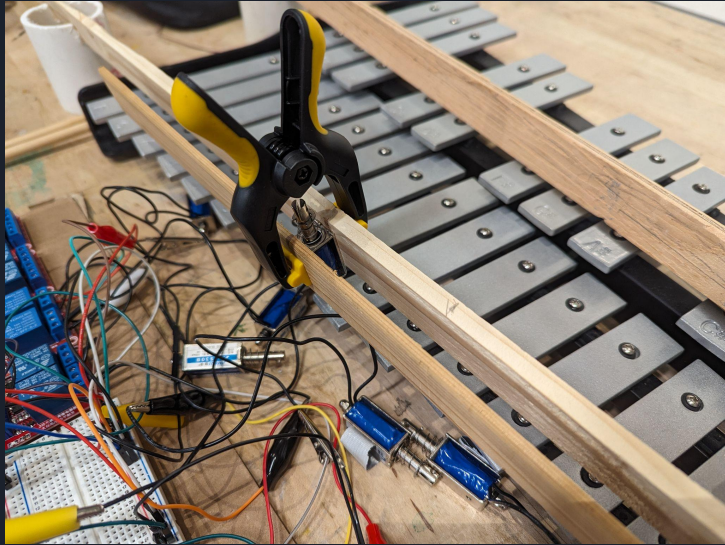


Why did I choose to do this project?

I chose this project because I thought it would be a fun and interesting way to learn more about electronics. It also had the added benefit of seeming cool to many people with ranges of knowledge with robotics



What was the hardest part?



The hardest part of this project was getting the first key working on the piano. After that, I could use what I learned to make the first to replicate that over multiple keys.



What was my favorite part?

My favorite part was coding the solenoids to play different songs. I ended up choosing Never Gonna Give You Up by Rick Astley, and it was fun to see peoples faces when they realized what the song was.

A-B ^D-B ^F# ^F# ^E

Never gonna give you up

A-B ^D-B ^E ^E ^D-^C#-B

Never gonna let you down ~

A-B ^D-B ^D ^E-^C# A A-^E ^D

Never gonna run around and desert you

A-B ^D-B ^F# ^F# ^E

Never gonna make you cry

A-B ^D-B ^A ^C#-^D-^C#-B

Never gonna say goodbye ~ ~

A-B ^D-B ^D ^E ^C#-A A ^E ^D

Never gonna tell a lie ~ and hurt you



How has my mentor helped me?

My mentor has helped me by giving me the necessary robotics knowledge when needed, and telling me when my approach to a problem might of been suboptimal to prevent me from putting too much work in on something that may not work.

```
int solenoidPin = 7;
int solenoidPin2 = 8;

int solenoids[] = {9,8,7,6};

int song[8]= {2, 2, 4, 4, 4, 2, 2, 4, 4};

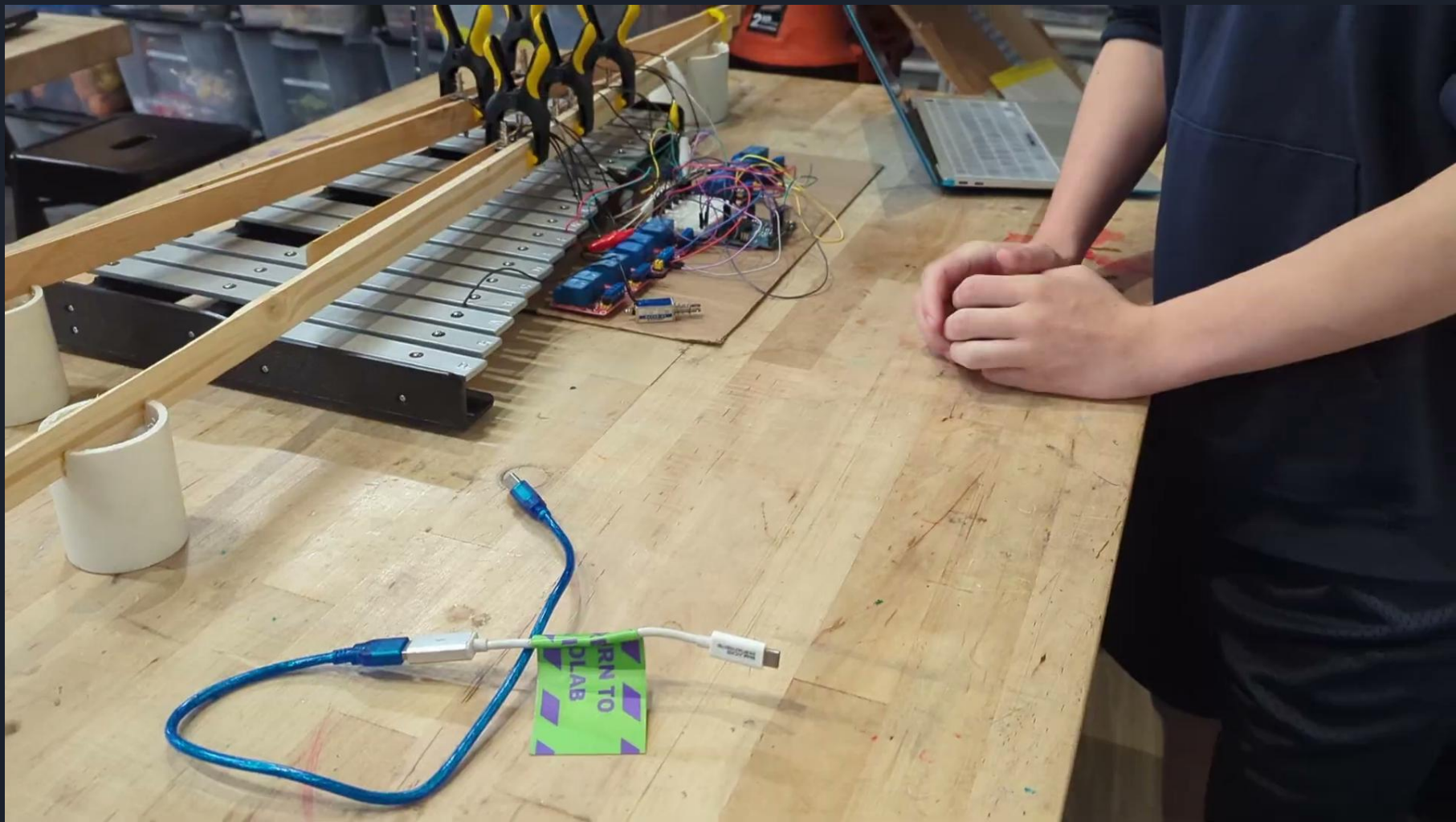
void setup () {
  for (int i = 0; i < 4; i++) {
    pinMode(solenoids[i],OUTPUT);
  }
  pinMode(LED_BUILTIN, OUTPUT);
}

void loop () {

  solenoidRun(3);
  delay(250);
  solenoidRun(3);
  delay(70);
  solenoidRun(2);
  delay(170);
  solenoidRun(3);
  delay(170);
  solenoidRun(1);
```

Watch the video walkthrough
of the project on the next slide







Link to Conor's Daily Journal

<https://docs.google.com/document/d/1IPLwtpgzzW835ZNFUcWmjiyVBDxpbJGvi8kwrNrzbQTI/edit?usp=sharing>