BOPit Glove

The use case for this project is to simply have fun and create your own version of the BOPit game. You can think of this as a coding adventure where you get to create your own game or as a fun item to distract small children. I have structured the code so it is easy to make your own changes and add your own light shows/sounds.

Materials and Prerequisites

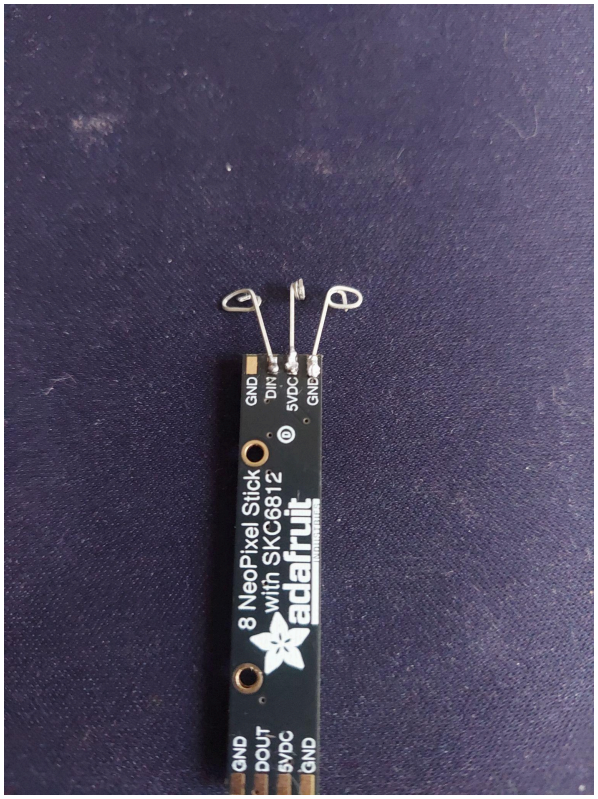
Materials and Tools:

- A glove. Preferably felt, but make it easy for yourself
- Conductive thread
- Conductive fabric
- Scissor, Pliers and Needles
- Scrap fabric and some mesh
- LED legs (6)
- Adafruit Flora Arduino
- Neopixel Stick - 8
- Tilt Sensor
- Speaker or a simple buzzer. I used this but it's a little overkill
- Bend/Flex Sensor
- 40 kilo ohm resistor

Prerequisites:

- We do some soldering to make our lives a little easier but alternate materials may let you get away without soldering anything.
- Basic sewing
- Some programming experience

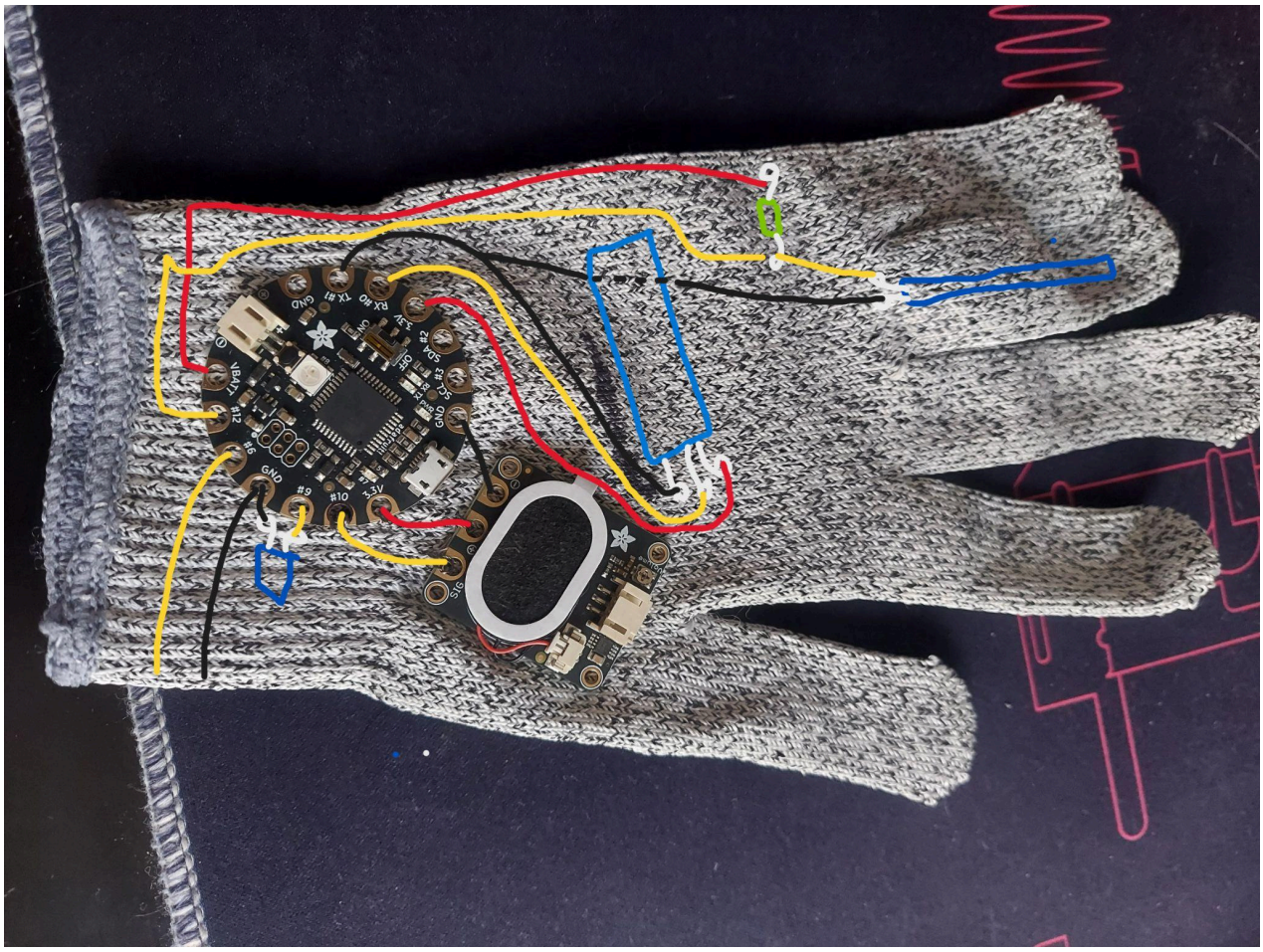
Set up



You can take the legs off of some old LED’s, wrap them around something hard to make little spools. This will make your life so much easier when we go to sew things on the glove.
You should also coil the legs of the resistor, and the legs of the tilt pin in a similar fashion.

Cut two pieces of the conductive fabric into 1 inch squares. Glue one piece to the palm of the glove and the other piece to a scrap of fabric slightly larger and let dry.

Next, plan out where you want to place your components and how you want to orientate your Flora.



Note: the green rectangle is our 40 kilo ohm resistor.

Assembly

Step 1 is to sew the speaker and flora on with conductive thread like the picture above.
Assembly tip 1: Place a scrap piece of plastic or wood in the glove so you don't sew through both ends of it.

Step 2 is to sew our Neopixel Stick to our Flora. These first few steps should be able to hold everything down onto the glove although loosely. At the end we will secure everything.

Step 3 is to get our flex sensor on. Relate to this video for exact details about the wiring of the flex sensor. If you follow my photo from the set up you should be good.
Assembly tip 2: Secure the flex sensor with some electrical tape at the tip

Step 4 sew the tilt sensor right next to pin #9 and ground.

By the end of those four steps we should have something like this:

Step 5 is to attach our button sensor. I first connected each side with conductive thread to test if it works. After this just sew the piece on using the extra space on the scrap fabric.

Finally, there are a few options for securing your neopixel lights. You could just tape it on, sew over it or just use fabric glue. Be aware that the glove needs to flex and as you put your hand in it so don't secure it too tightly.

Programming it

The BOPit.ino file contains what I have written to get my program working. Additionally, there is a star_trek_theme.h file that contains the melody and notes needed for our winning song. All the game logic is already implemented with these required functions: `bop()` `shake()` `bend()`. YOU can change the light show for each one to put your own spin on things or just use mine. There is also a `playActionSound()` that you customize yourself.