Really Robotic Robot Costume - Sound Reactive Robot Mouth

Make your cardboard robot costume talk when you do with this sound reactive LED mouth animation.

Written By: Natasha Dzurny



INTRODUCTION

Meet Sally Servo - the Really Robotic Robot. :)

In this tutorial, you'll learn how to make a sound-reactive LED robot mouth like Sally's. This project requires soldering, but is simple to code and build. Adding a sound reactive mouth will really make your robot costume come alive!

TOOLS:

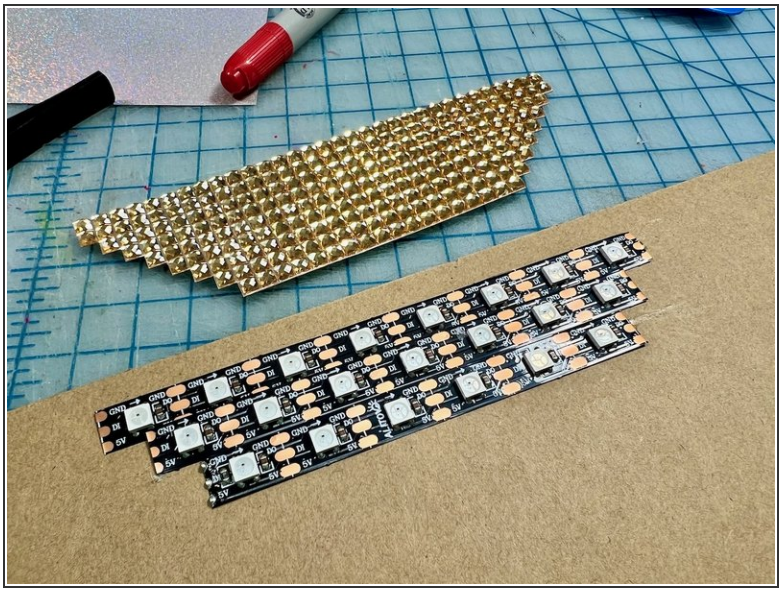
- Markers, Crayons, or Colored Pencils (1)
- Awl (1)
- Soldering Iron (1)

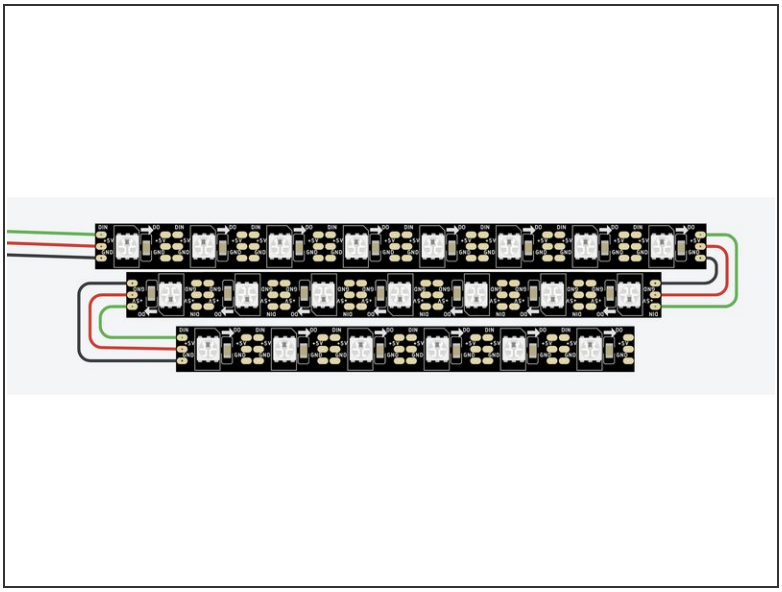
PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Jumper Wires (1)
- 60 LED/meter Neopixel Strip (1)
  (21 Pixels)
- Rhinestone Sheet (1)

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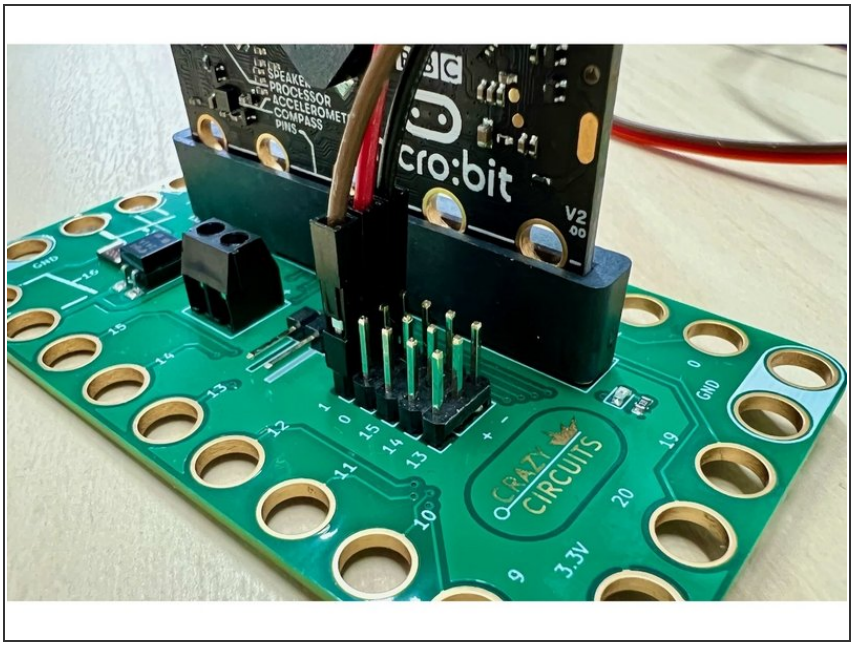
Step 1 — Plan the mouth shape





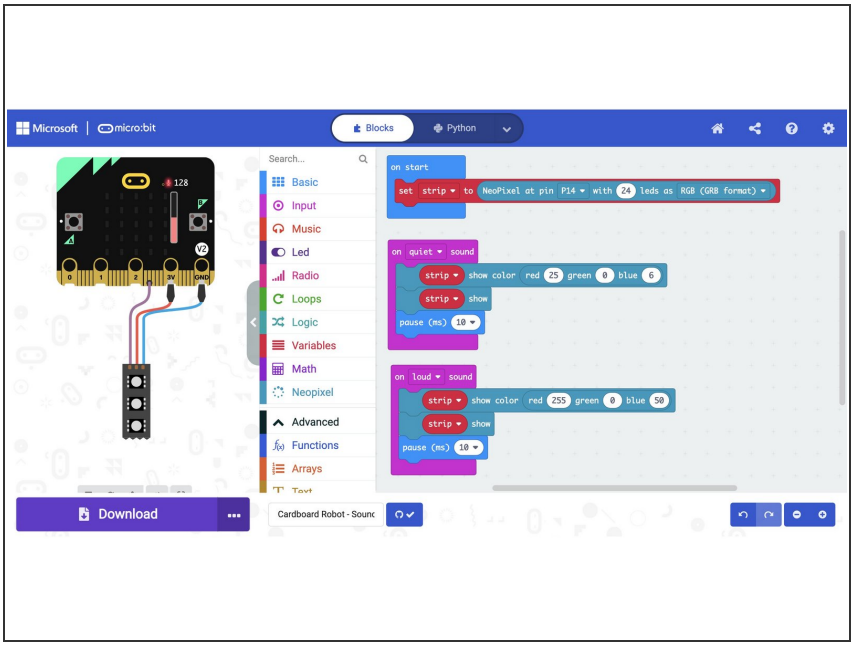
- Plan the mouth shape. We used three rows of LEDs, with 8, 7, and 6 LEDs each.
- Glue the LED strips to a piece of cardboard and solder the rows together as shown. (the order of wires may be different depending on the brand of LEDs you have)
  - Tips: Use female jumper wires to start the first row to make it easy to connect to the bit board.
  - Remember to turn the middle row upside down so that you can zig-zag the rows and keep the data flow.

Step 2 — Connect the LEDs



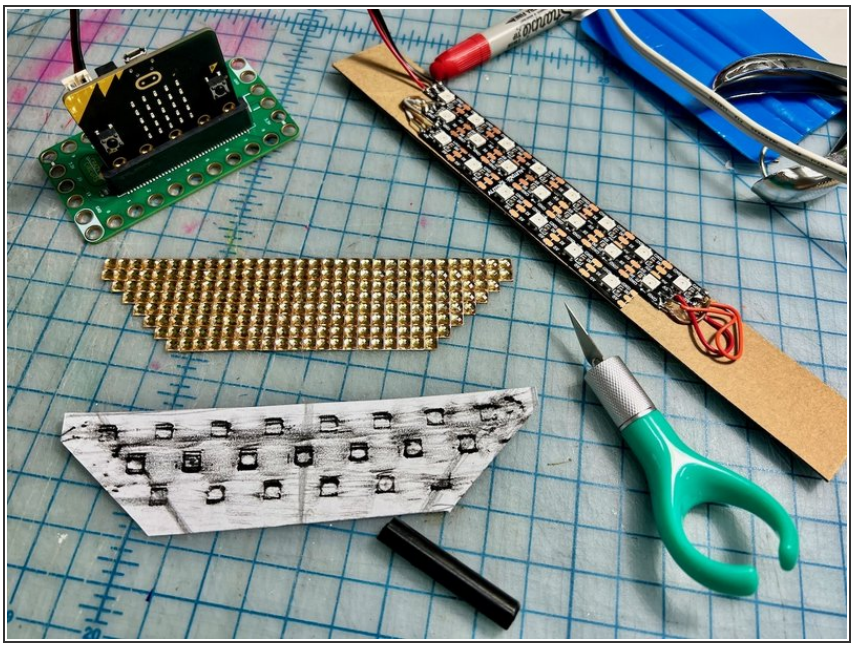
- Connect the DI wire to **Pin 1** on the bit board, 5V to **+** and GND to **-**.
- Place the micro:bit into the bit board.

Step 3 — Code the LEDs



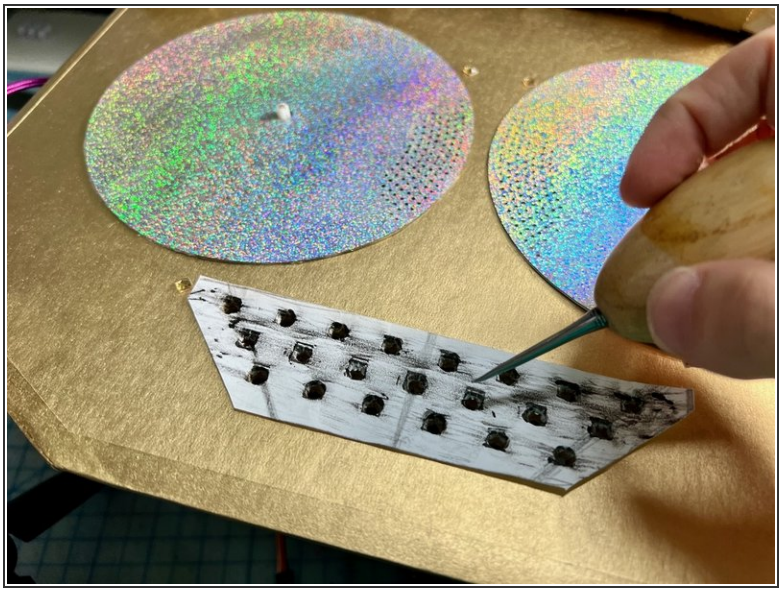
- Upload the code, [available here.]
- When there is only a small amount of noise, the LEDs are barely on, but with a loud noise the LEDs shine brightly. In normal room volume, this will make the robot look like she's talking whenever the person wearing the costume is talking.

Step 4 — Make an LED Rubbing as a template



- Make a rubbing of the LEDs with a crayon and a piece of printer paper. This will create a hole punching template for the correct spacing of the LEDs.
- Cut out the template.

Step 5 — Poke the holes

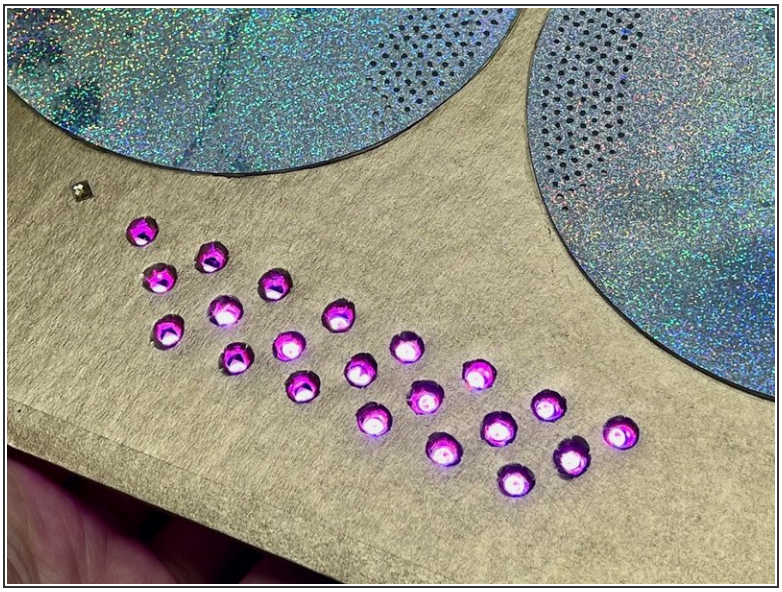




- Place the template where the mouth goes. Use an awl to poke each hole.
- Alternate: If you don't have an awl, you can cut out a large hole that surrounds all of the LEDs.

Step 6 — Tape the LEDs behind the holes

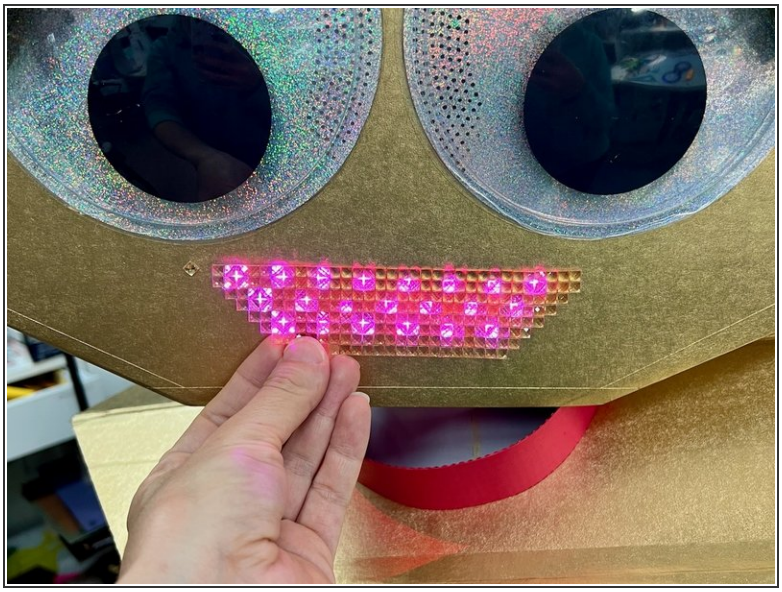




- Use strong tape or hot glue to position and attach the LEDs (and the cardboard they are glued to) behind the holes.

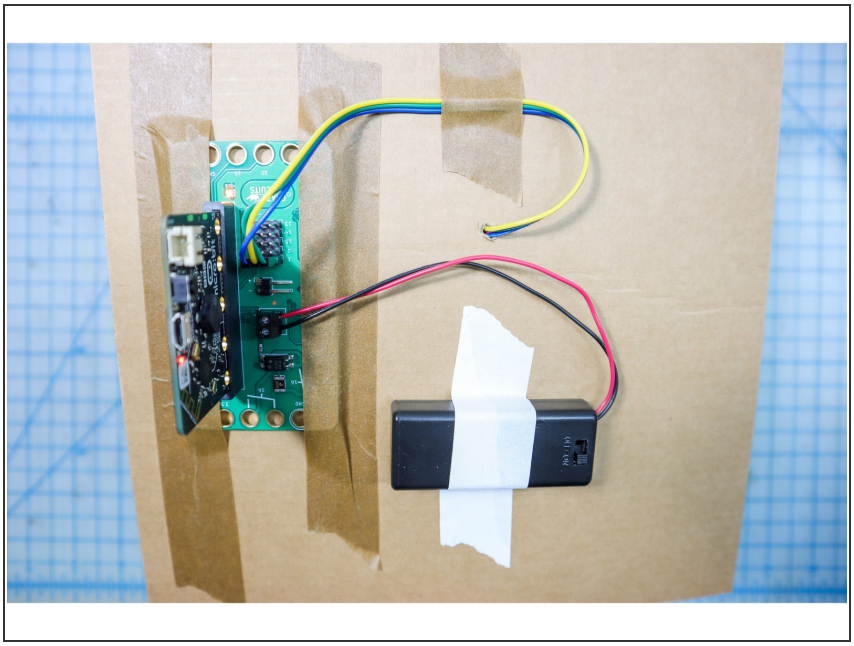
Step 7 — Add Rhinestones





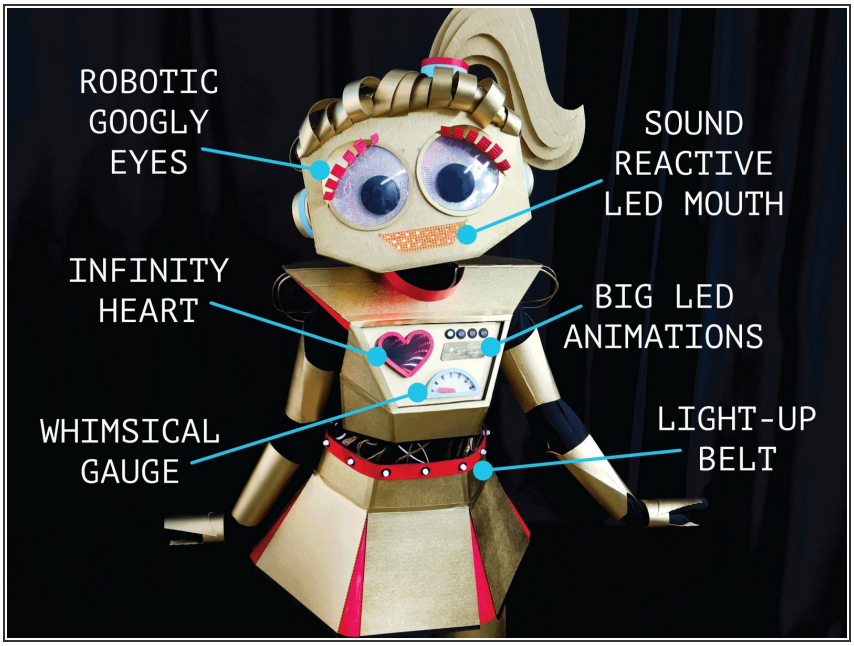
- Cover the mouth with a sheet of rhinestones, cut to the shape of a mouth. Remove the mirror backing sheet if you'd like to see the LEDs shine brighter.

Step 8 — Connect a battery



- Connect a battery pack to power the circuit on the go.

Step 9 — Create the rest!



- Continue to build your Really Robotic Robot costume! For more, view these guides:
  - LED Belt
  - LED Light Animations
  - Whimsical Robot Gauge
  - Robotic Googly Eyes
  - Infinity Mirror Robot Heart