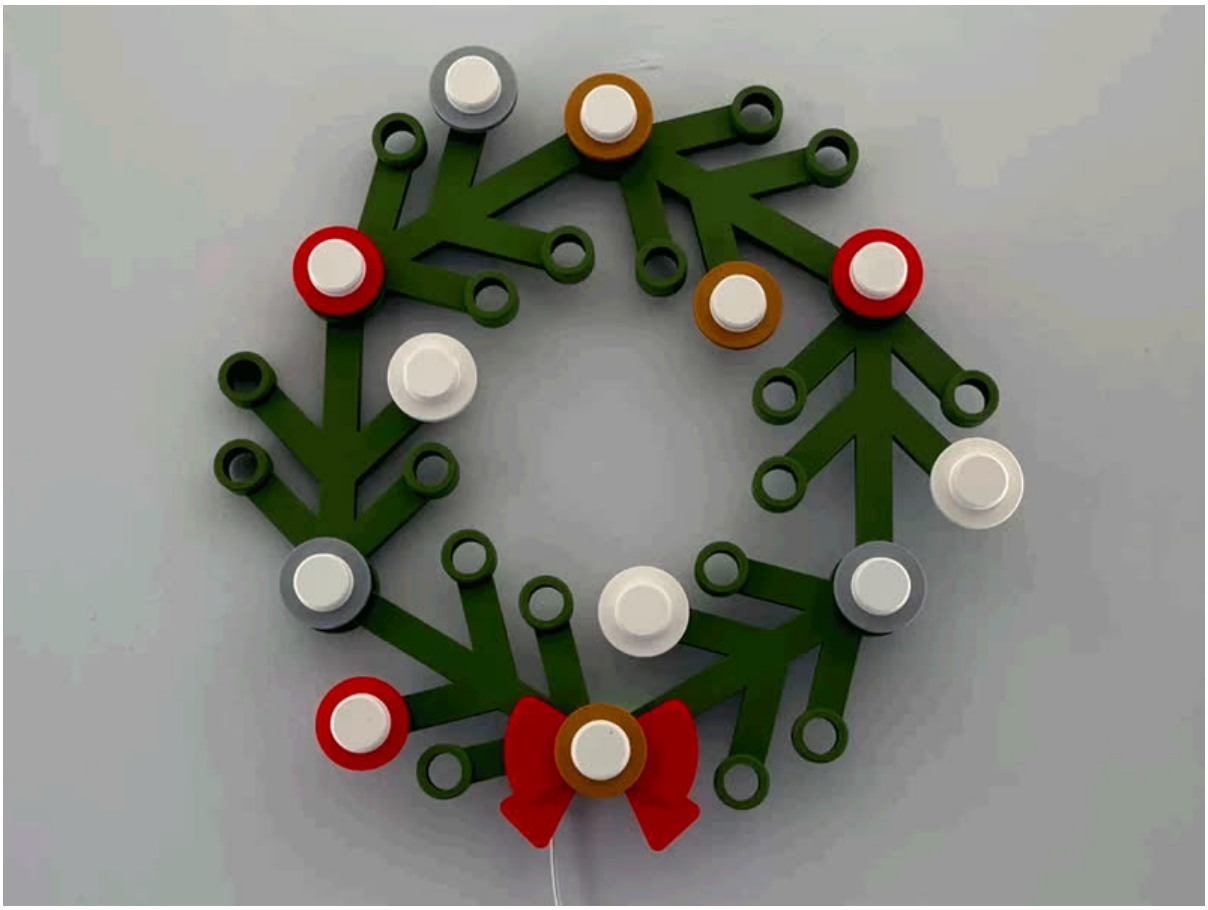
NeoPixel Brick Holiday Wreath

Created by Ruiz Brothers



https://learn.adafruit.com/holiday-brick-wreath

Last updated on 2026-11-06 04:42:41 PM UTC

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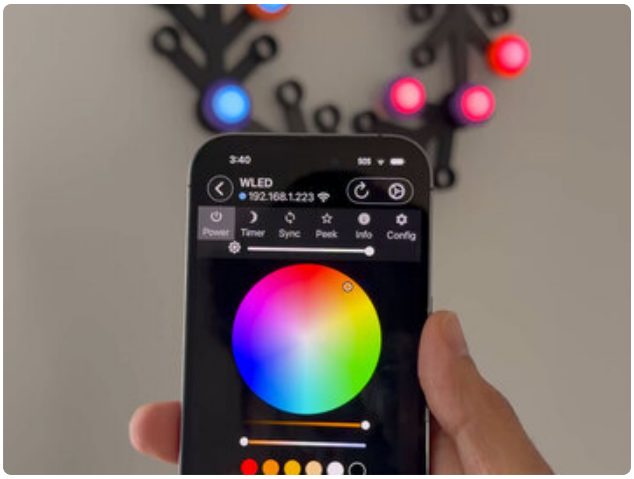
Overview

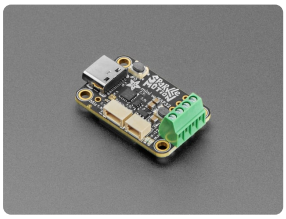
Build a holiday inspired wreath that lights up with animated NeoPixel LEDs! This project uses the Adafruit Sparkle Motion Mini, 12 NeoPixel JST breakouts and matching cables so there's no soldering required.

The 3D printed branches snap together and feature modular pieces that diffuse the LEDs. You can 3D print the parts in different colors to make it themed for Halloween, Christmas, Hanukah or just a festive party!



Just install the free WLED software onto the Sparkle Motion Mini to get amazing LED animations that pulse, sparkle, and fade. The WLED firmware features remote control over WiFi so you can easily change the colors and effects with a mobile device or computer. With the Sparkle Motion Mini's built-in I2S microphone, you can even enable audio reactive LED animations!

Parts

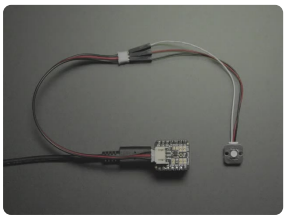


Featured

Mini Sparkle Motion with Pre-soldered Terminal Block

The Adafruit Sparkle Motion Mini is part of our series of "Sparkle Motion" boards, which are our attempt to make the best...

https://www.adafruit.com/product/6314

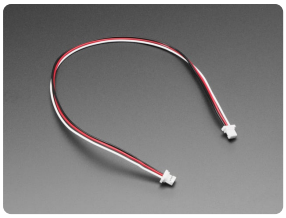


Featured

Adafruit NeoPixel Breakout with JST SH Connectors (×12)

This little breakout makes it easy to add a single NeoPixel to a project, with mounting holes and a pluggable connector. The PCB is less than 0.5"x0.5" and comes with two

https://www.adafruit.com/product/5975

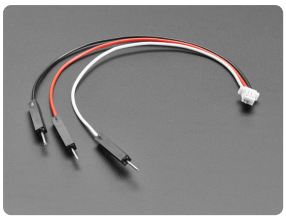


Featured

JST SH Compatible 1mm Pitch 3-pin - Plug-Plug Cable (×11)

If you fancy connecting to anything else with a JST SH compatible 3-pin connector, this cable will do the trick. For example, our

https://www.adafruit.com/product/6406



Featured

JST SH Compatible 1mm Pitch 3 Pin to Premium Male Headers Cable

If you fancy connecting to anything else with a JST SH compatible 3-pin connector, this cable will do the trick. For example, our

https://www.adafruit.com/product/5755

Featured

5V 1A (1000mA) USB port power supply - UL Listed

Need a USB jack for charging or powering a project, but don't want to lug around a computer? This switching supply gives a clean regulated output at up to 1000mA! 110 or 240 input,...

https://www.adafruit.com/product/501

Featured

Black Woven USB C to USB A Cable - 2 meters long

This cable is not only super-fashionable, with a woven pattern in classic Adafruit black, it's also made for USB C for our modernized breakout boards, Feathers, and...

https://www.adafruit.com/product/6324

Hardware Fasteners

The following hardware fasteners are required for this build.

- 2x M2.5 x 6mm long steel machine screws
- 12x M2 x 6mm long steel machine screws

Circuit Diagram

The diagram below provides a general visual reference for wiring of the components once you get to the **Assembly** page. This diagram was created using Adafruit Circuit Designer ().

Wired Connections

The Sparkle Motion Mini is powered by a 5V 1A USB power supply. The NeoPixels are daisy chained together using 3-pin JST-SH cables. The NeoPixel strand is connected to the screw-block terminals on the Sparkle Motion Mini

- DATA IN from NeoPixel JST breakout to pin D32 on Sparkle Motion Mini
- GND from NeoPixel JST breakout to GND pin on Sparkle Motion Mini
- 5V from NeoPixel JST breakout to 5V pin on Sparkle Motion Mini

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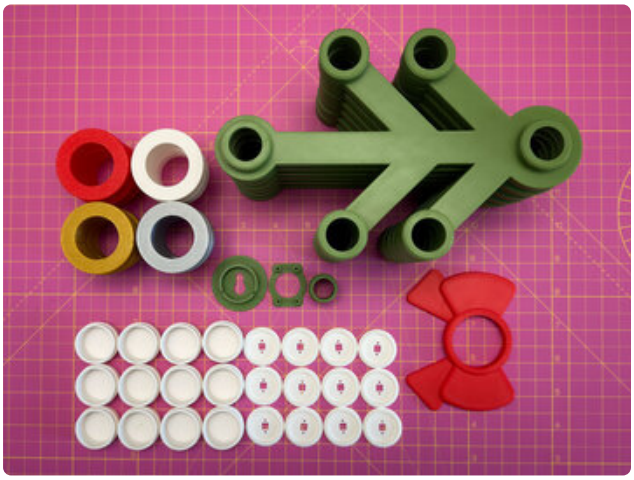
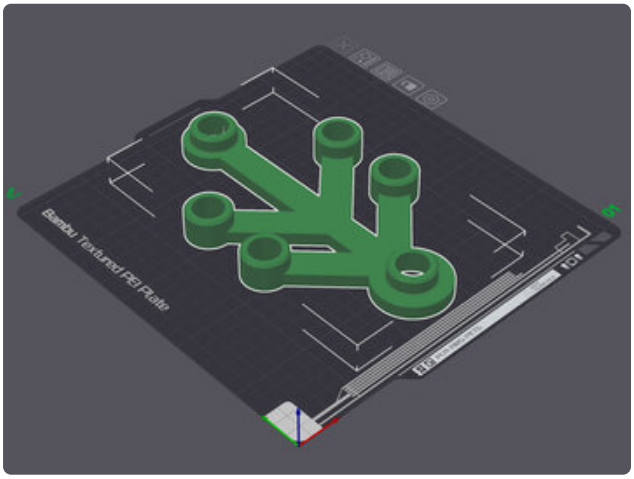
CAD Files



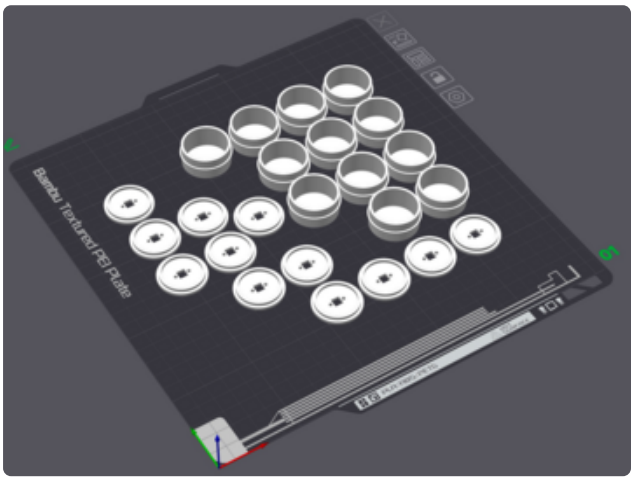
CAD Parts

Individual 3MF files for 3D printing are oriented and ready to print on FDM machines using PLA filament. Original design source files may be downloaded using the links below.



Build Volume

The panel require a 3D printer with a minimum build volume of 137 (X) x 220 (Y) x 20mm (Z).

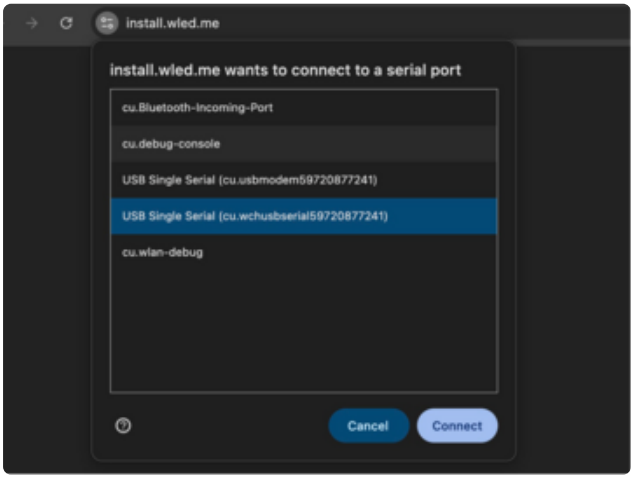


Multiple Copies

The following parts will need to multiple copies. Set up multiple copies in the slicing software.

6x Branches
12x Stud Cap
12x Stud Brick
12x Stud Cover

Install WLED



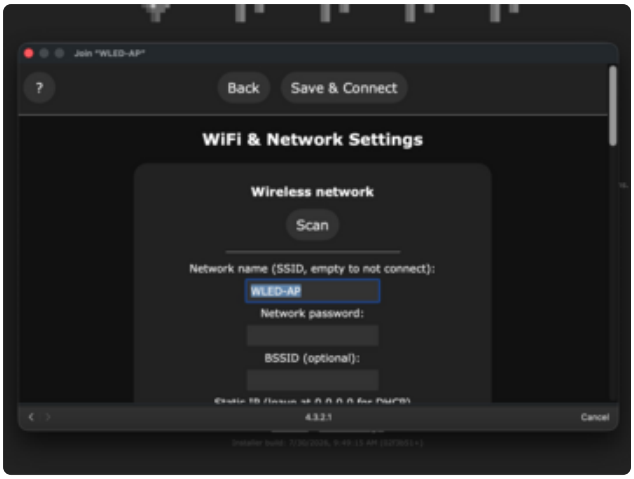
Connect & Install

Connect the Sparkle Motion Mini board to your computer using a data USB cable.

Go to the WLED install website, https://install.wled.me/ () and click on the install button.

In the popup window, select USB Single Serial (cu.wchusbserial-xxx on mac and COMxx on Windows) and click Connect.

Check the latest version of WLED is selected and click Install.



Join & Setup Network

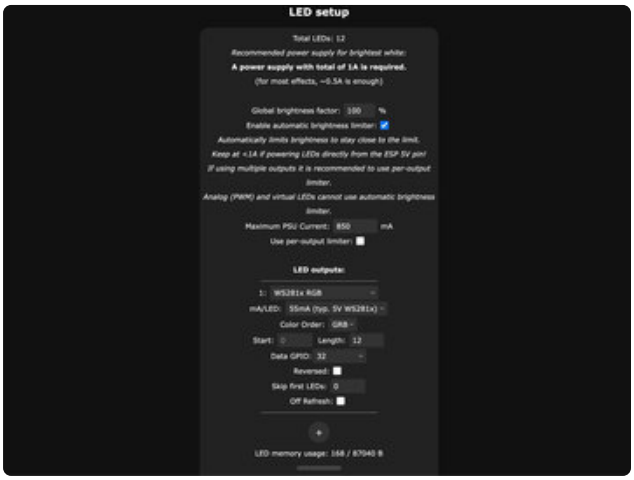
After installation is complete, goto your computers WiFi settings and join the "WLED-AP" network.

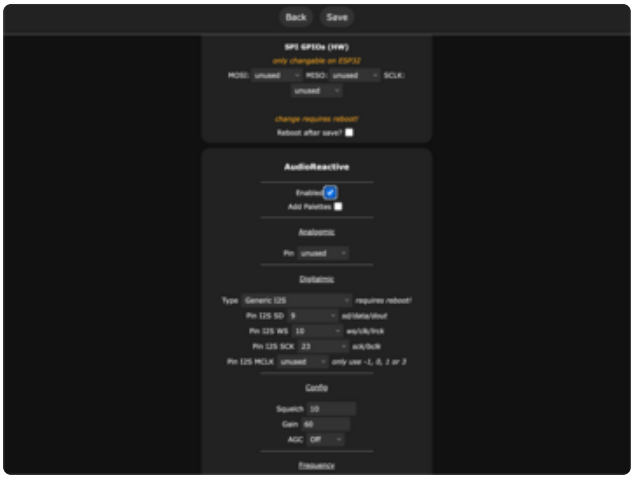
A popup window will display WLED setup page. Click on WiFi & Network Settings.

Enter your WiFi network credentials in the text fields.

Scroll down to the DNS & mDNS section and enter a desired mDNS name.

Click Save and Connect when finished & ready.





LED & Mic setup

After configuring the network in WLED, you should be able to goto the mDNS URL you entered earlier in your web browser.

Click on the Config icon in the top menu, then LED & Hardware.

Under LED Outputs, enter 12 in the Length text field then select 32 in the Data GPIO dropdown menu and then click the Save button.

Click on the Back button then click Usermod.

Locate the AudioReactive section and click Enable. Ensure Generic I2S is selected under Type.

Then choose 9 for Pin I2S SD, 10 for Pin I2S WS and 23 for Pin I2S SCK.

Click the save button. Then click the reset button on the Sparkle Motion Mini board.

WLED Controller

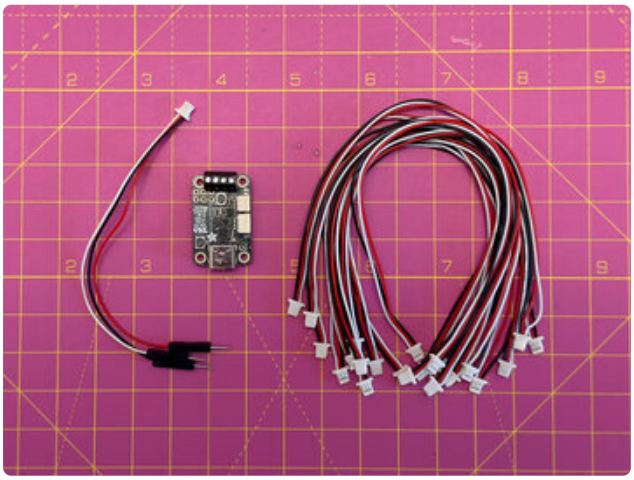
The Sparkle Motion Mini will automatically reboot and light up all of the LEDs in a solid orange color.

Refresh your WLED URL in the web browser.

Use the controller interface to set colors and LED effects by clicking on the elements.

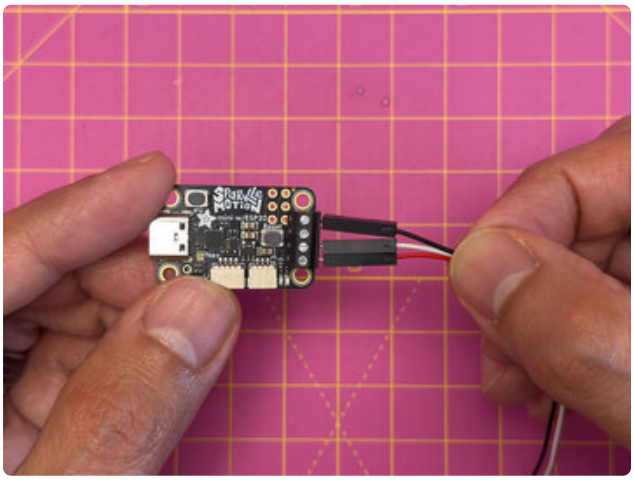
Reference the WLED manual () for more information how the user interface and features.

Assembly



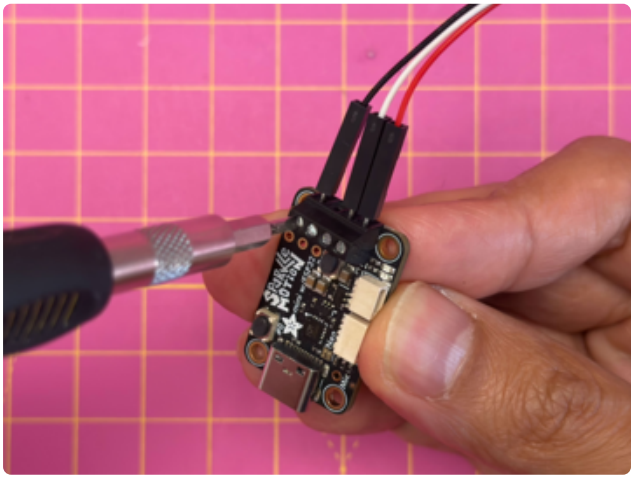
Sparkle Motion Cables

Get the parts ready to assemble.



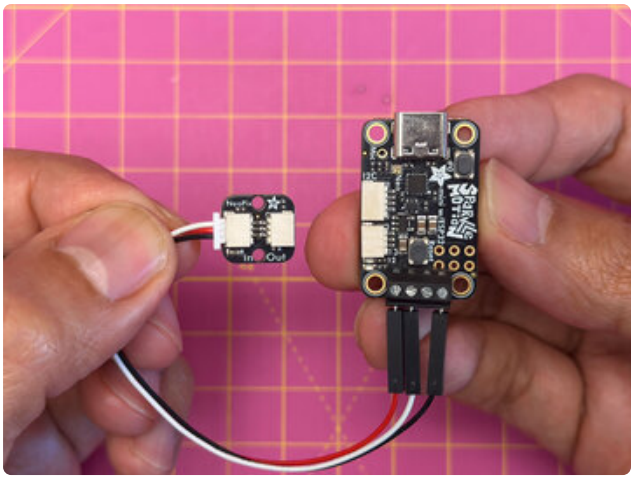
Secure Cable to Sparkle Motion Mini

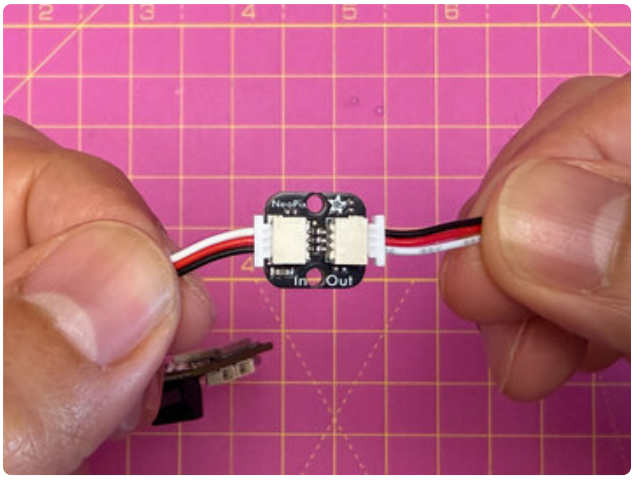
Use the 3-Pin JST-SH Male Headers Cable to connect the NeoPixels to the Sparkle Motion Mini.

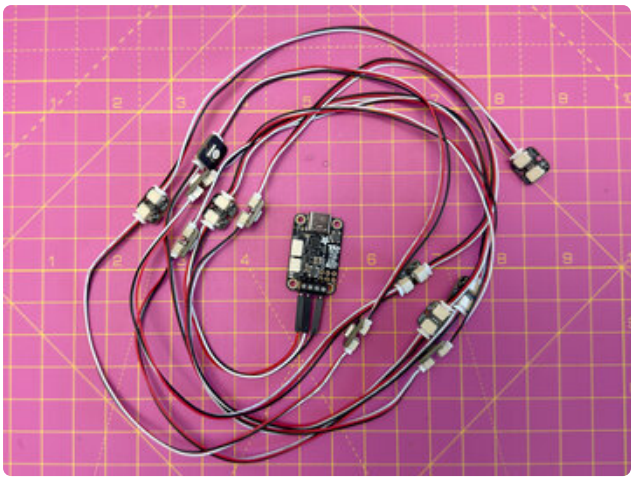


Insert the red wire to the 5V pin, black wire to GND pin and white wire to pin 32 on the Sparkle Motion Mini's screw-block.

Use a flat head screw driver to secure the header pins.







Connect NeoPixels to Sparkle Motion Mini

Insert the first NeoPixel JST breakout with the connector plugged into the IN port.

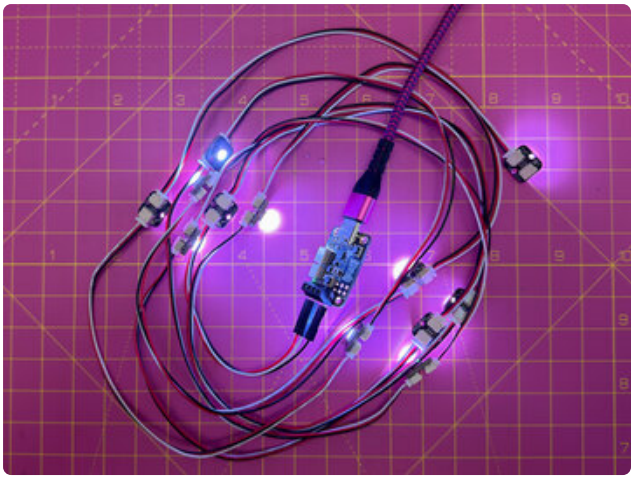
Connect a 3-pin JST-SH cable into the OUT port.

Connect the second NeoPixel JST breakout to the cable going into the IN port.

Connect another cable to the OUT port.

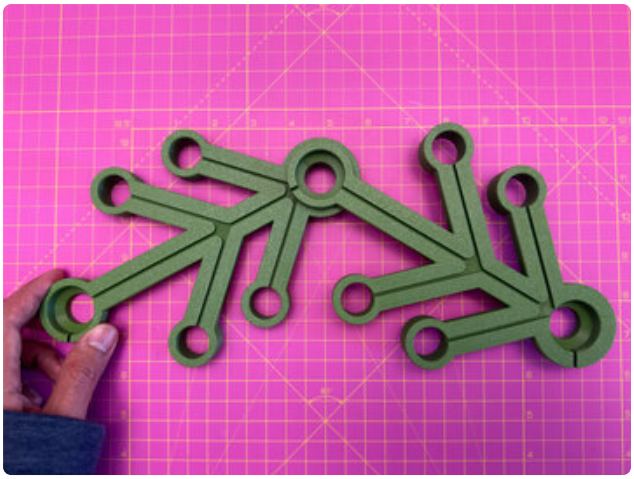
Repeat this process for all of the NeoPixel JST breakouts.

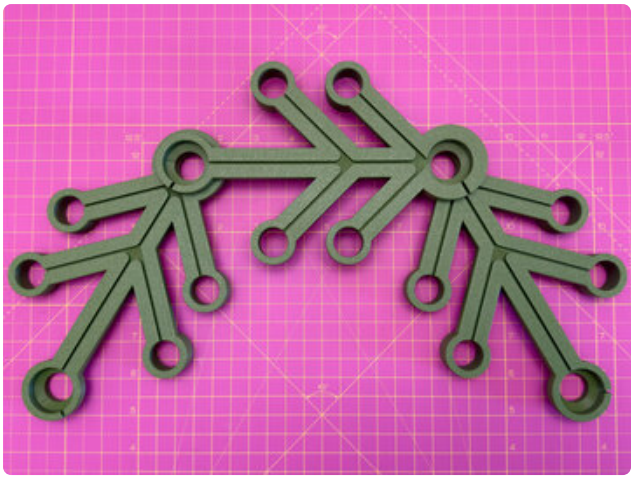
There should be 12 total NeoPixel JST breakouts daisy chained together with the cables going from IN to Out

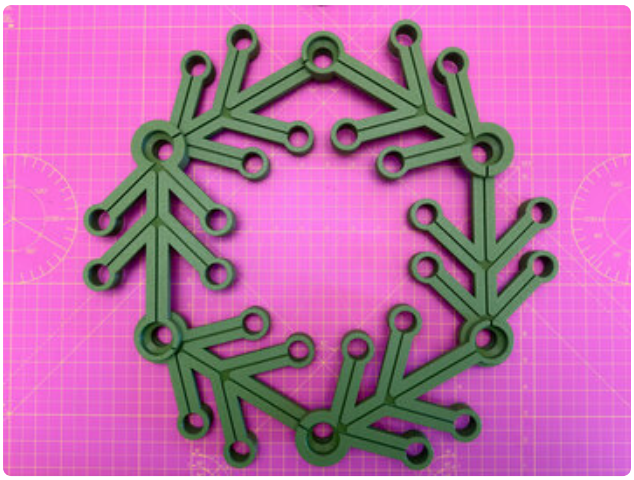


Test Circuit

Plug in a USB-C cable from the Sparkle Motion Mini board to the 5V 1A power supply to test the circuit.







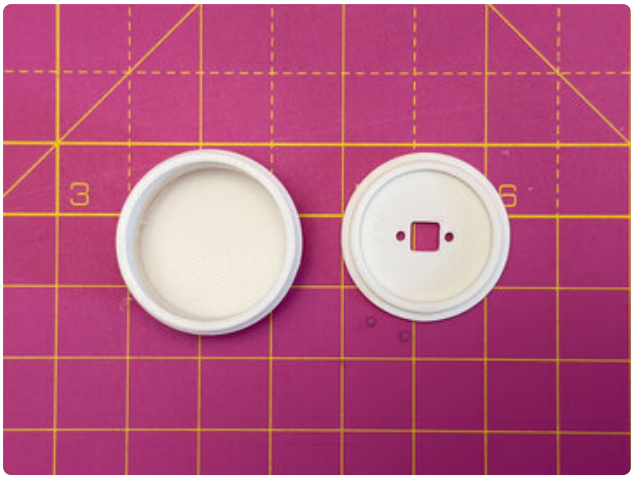
Connect Branches

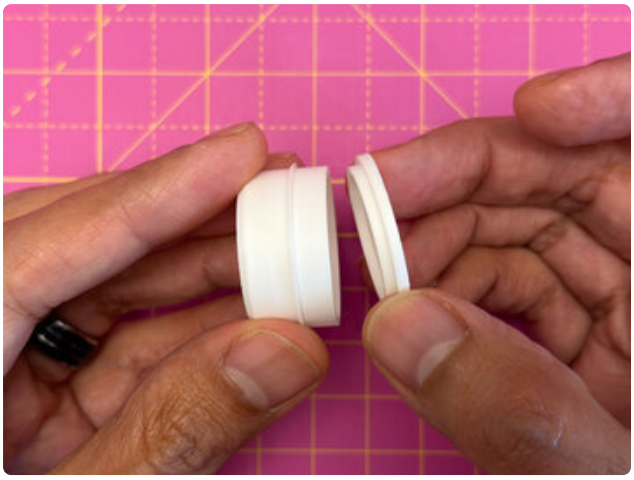
Get all six branches ready to connect together.

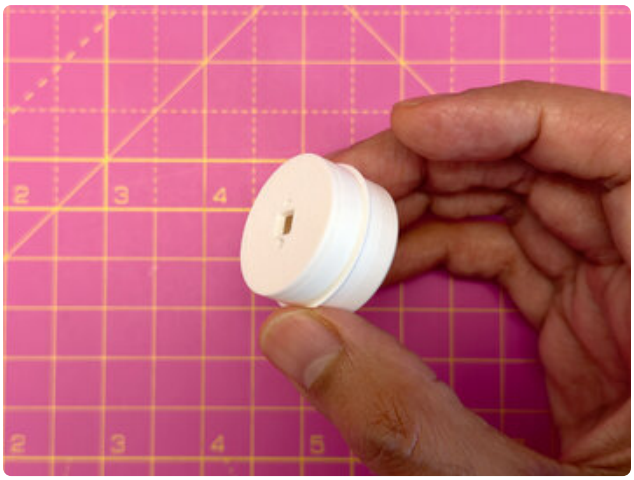
Grab two branches and connect them together by joining the studs.

Place a third branch, on the opposite stud, fitting under the first branch like shown in the photo.

Repeat this process for all six branches.







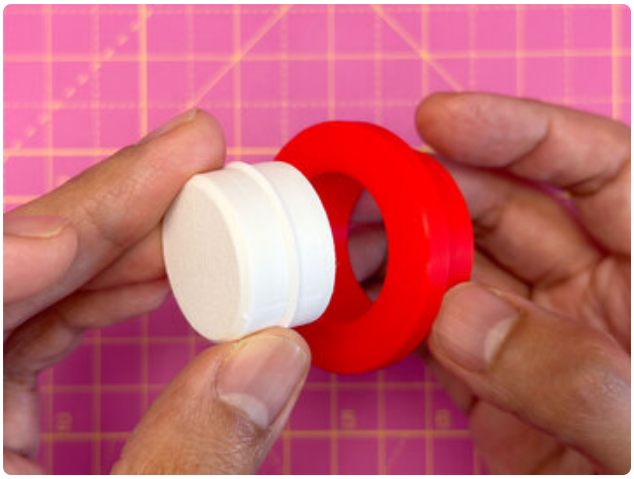
Studs Cap

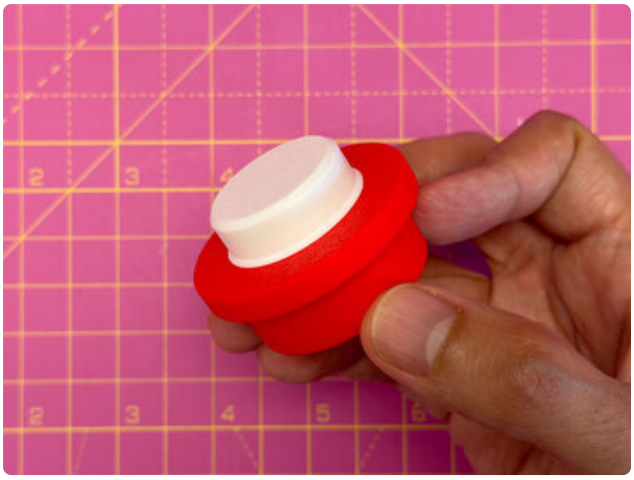
Get the stud cap and cover ready to install together.

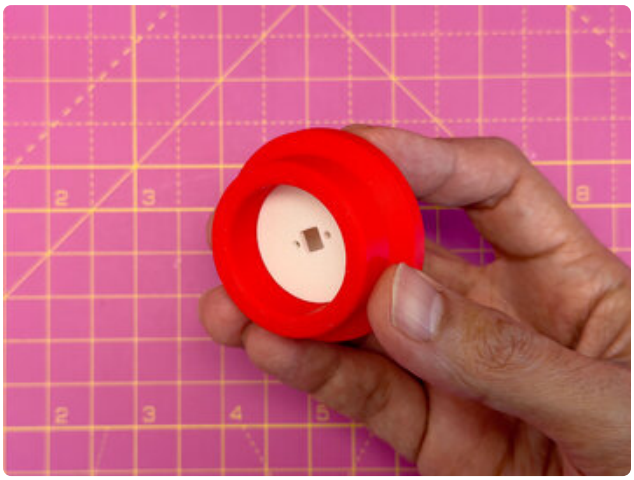
Insert the stud cover into the stud cap and snap fit them together.

Assembled Stud Caps

Repeat the assembly for all twelve studs.







Install Stud Brick

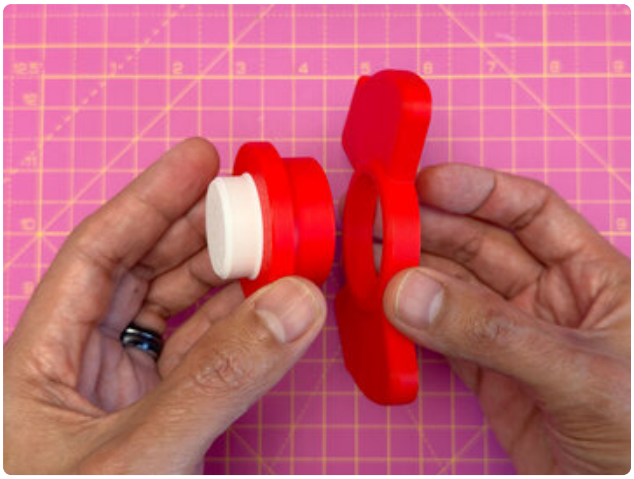
Get the stud bricks ready to install.

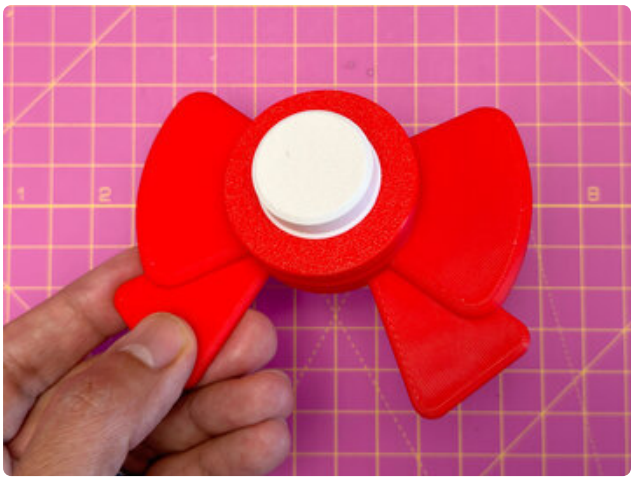
Orient a stud brick with the wide flange facing up, then insert an assembled stud cap through the hole.

Press them together until the stud's ridge sits flush with the stud bricks flange.

Assemble Brick Studs

Repeat the installation process for all twelve brick studs.

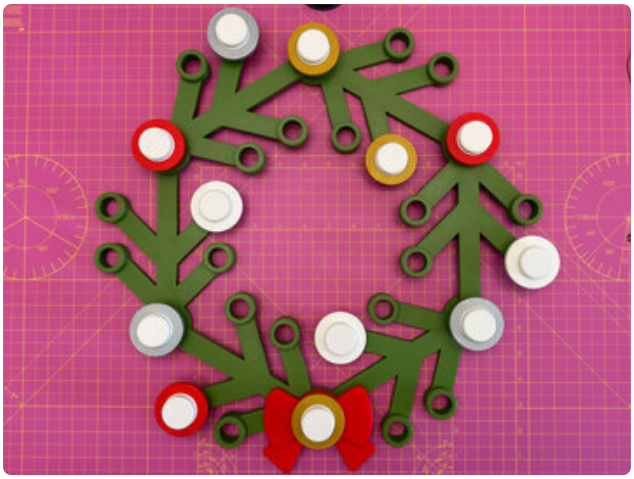




Ribbon Setup (Optional)

The ribbon and spider add-ons are accessories designed to fit onto the stud bricks.

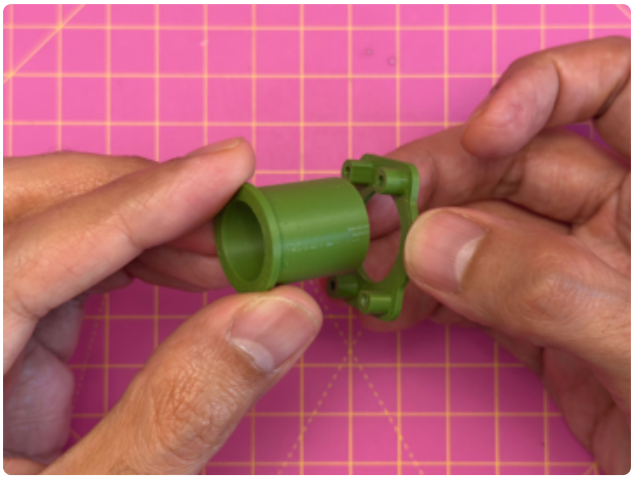
Insert them through the bottom of the brick stud.

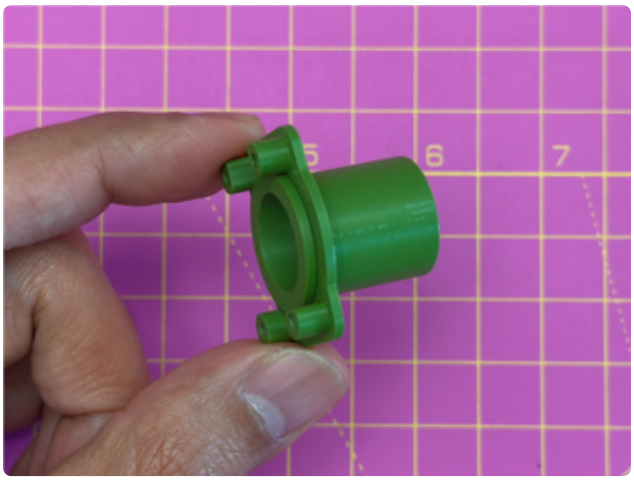


Install Assembled Studs

Snap fit the assembled brick studs onto the circular tubes on the branches.

Install them randomly or in a pattern, how ever you like!

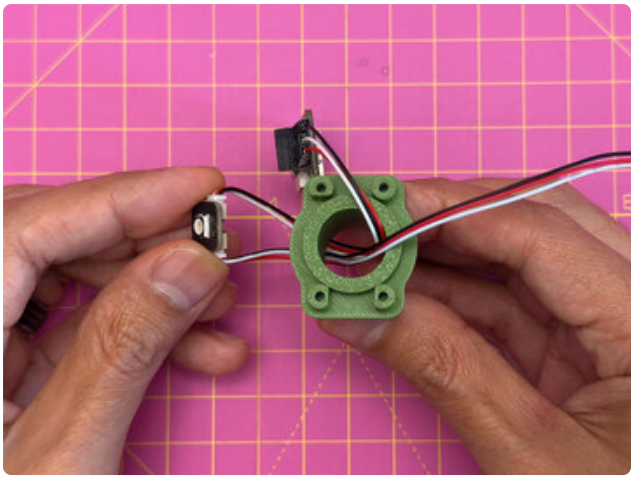


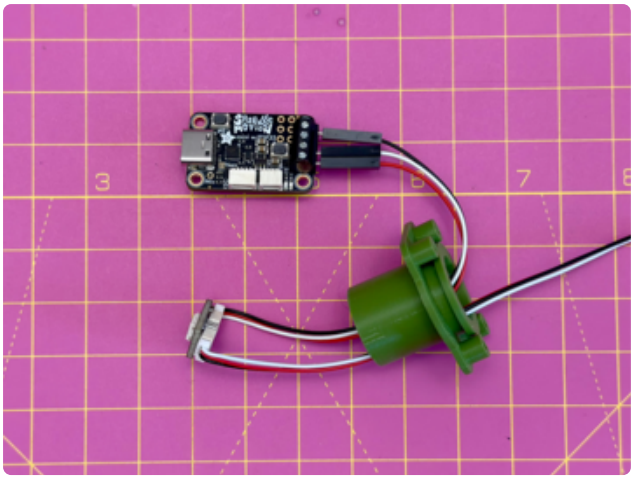


PCB Mount

Set up the PCB mount by inserting the PCB tub through the opening on the PCB mount.

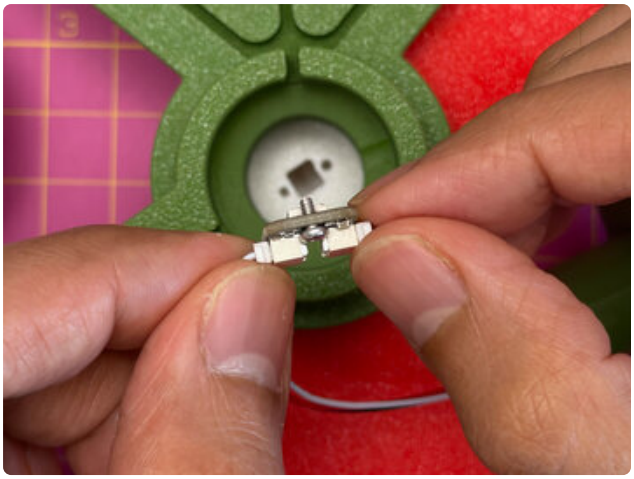
Ensure the parts are in the correct orientation when installing them together.

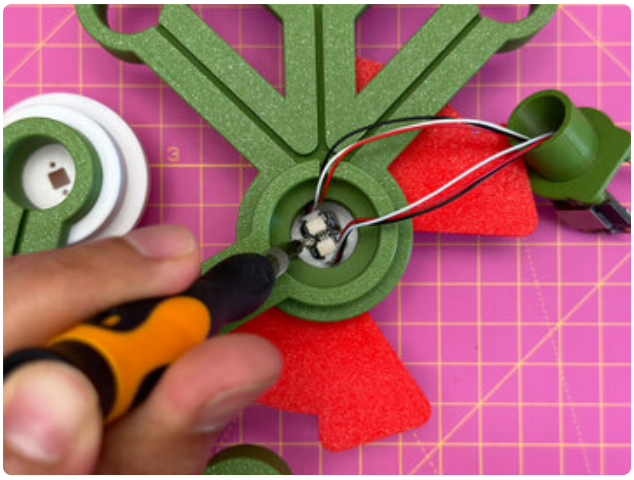


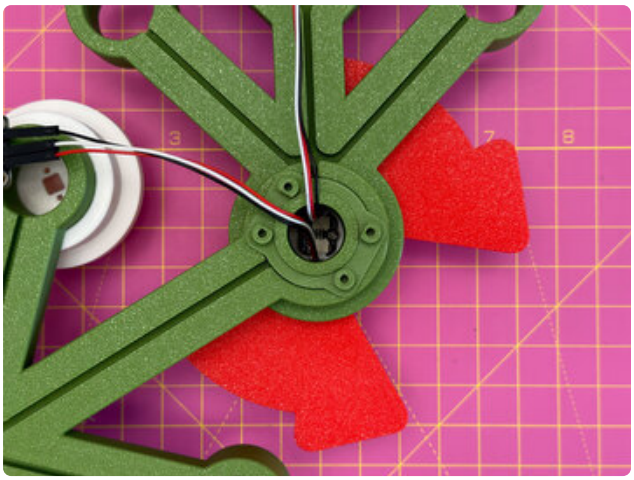


PCB Mount Setup

Grab the first NeoPixel thats connected to the Sparkle Motion Mini and insert it through the tube on the PCB mount.







Install Secure First NeoPixel

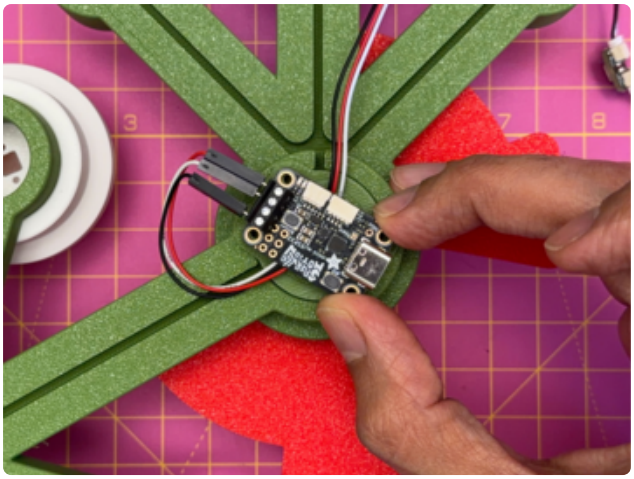
Choose a stud where the branches connect. This will be where the first NeoPixel and Sparkle Motion Mini board will be installated.

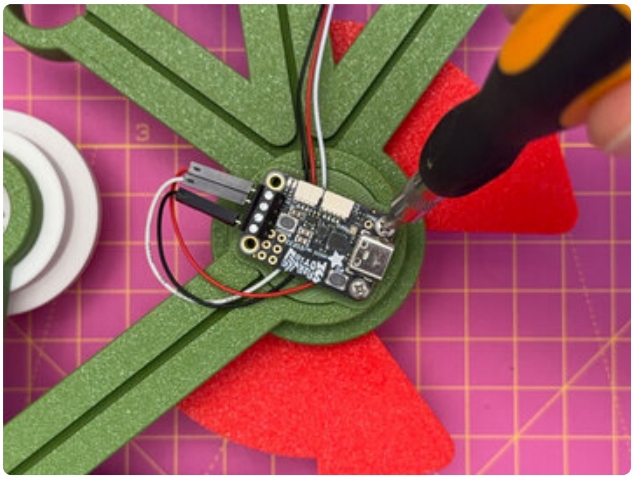
Insert an M3 screw through one of the two mounting holes on the first NeoPixel breakout.

Place the NeoPixel over the mounting holes on the stud cover.

Use a screwdriver to fasten and secure the NeoPixel to the stud cover.

Fit the PCB mount into the stud where the branches are connected.



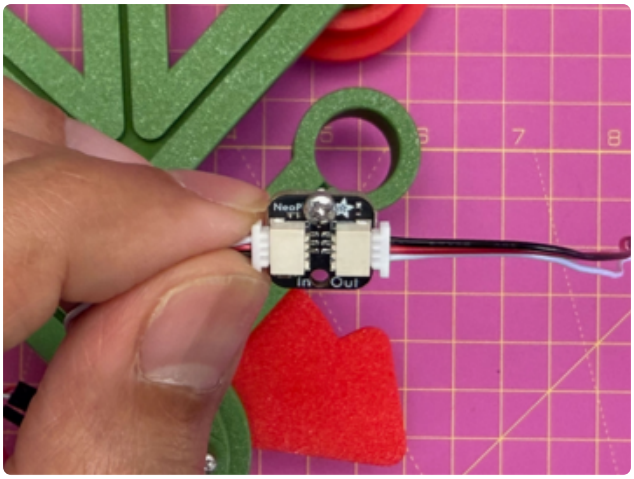


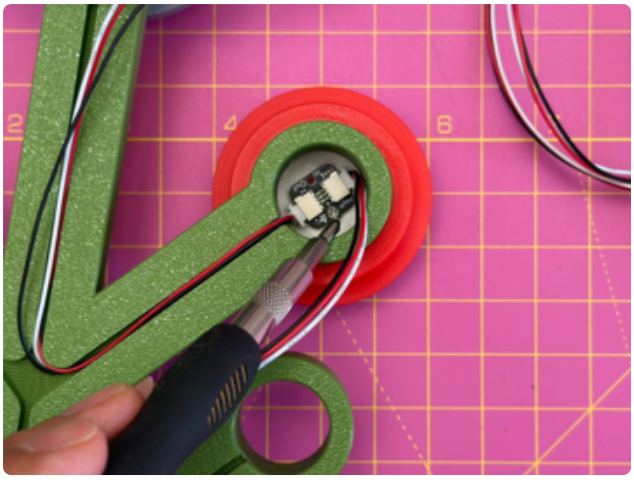
Secure Sparkle Motion Mini

Orient the PCB mount with the Sparkle Motion Mini board so the standoffs can fit under the PCB.

Place the Sparkle Motion Mini board over the four standoffs on the PCB mount.

Insert and fasten two M2.5 screws to secure the PCB to the mount.





Secure Second NeoPixel

Grab the second NeoPixel in the chain and insert an M2 screw through one of the two mounting holes.

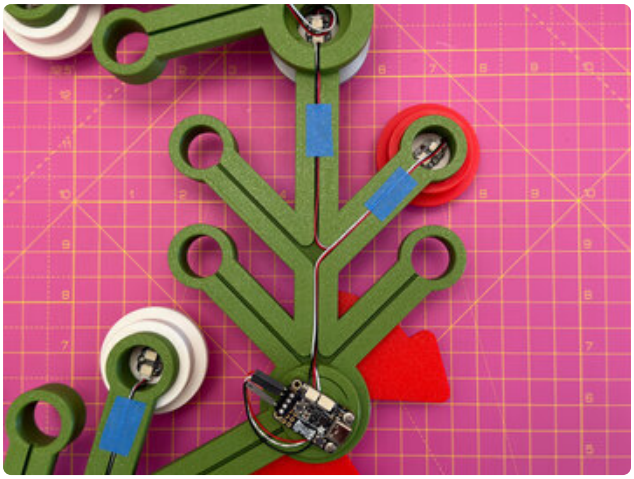
Place the NeoPixel onto a stud on the wreath so it's to the right side of the Sparkle Motion Mini PCB.

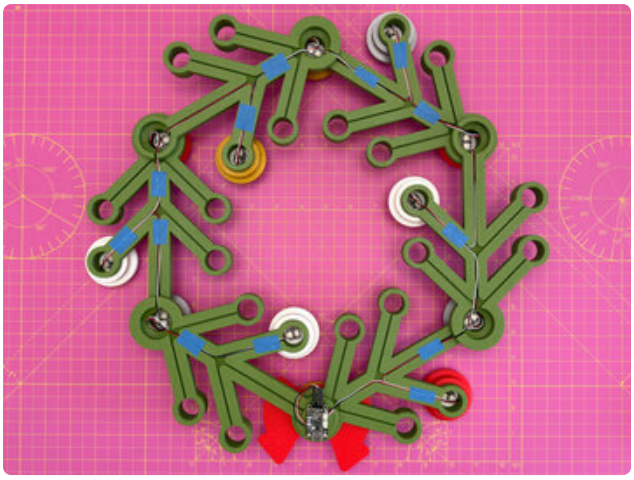
Fasten to secure the NeoPixel to the stud.

Secure NeoPixels to Wreath

Repeat the installation process, with the NeoPixels follow the order of the studs.

Reference the assembly photo for NeoPixel placement. Your stud layout might be different but the flow should be similar.

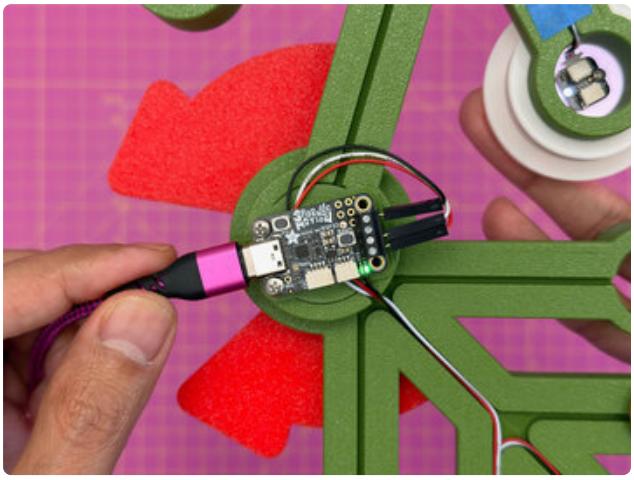




Secure Wires

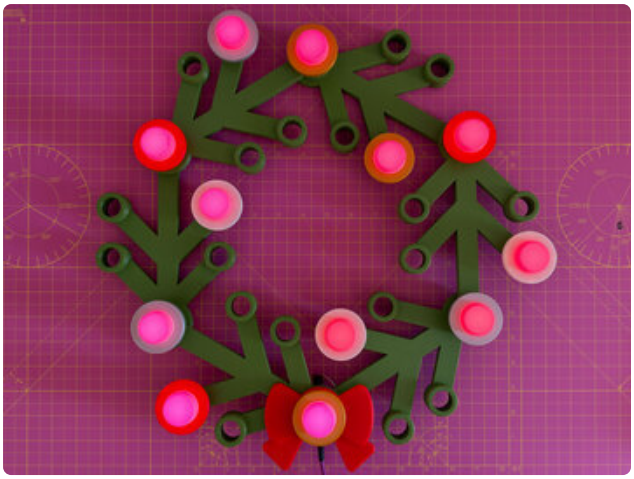
To keep the cables neat, you can fit them into the built-in channels on the branches.

Optionally use tape to keep the wires fitted inside the channels.



USB Power

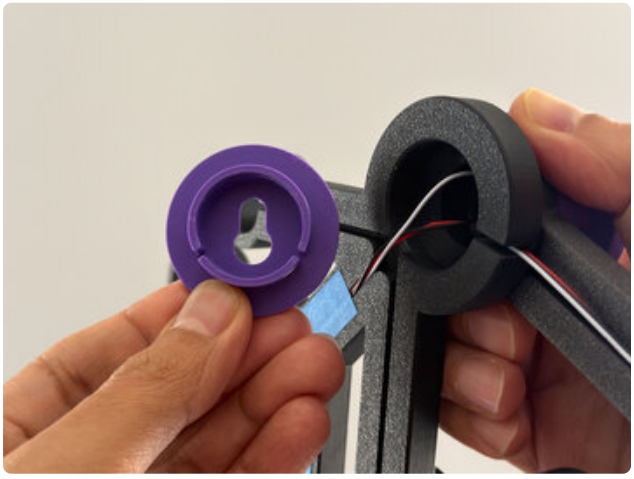
Connect a USB-C cable to a 5V 1A power supply and plug it into the USB-C port on the Sparkle Motion Mini.

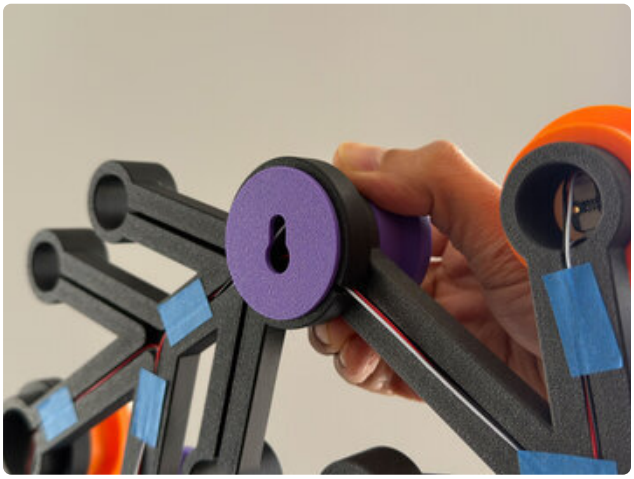


Final Build

Congratulations on building the NeoPixel Holiday Wreath!

Use





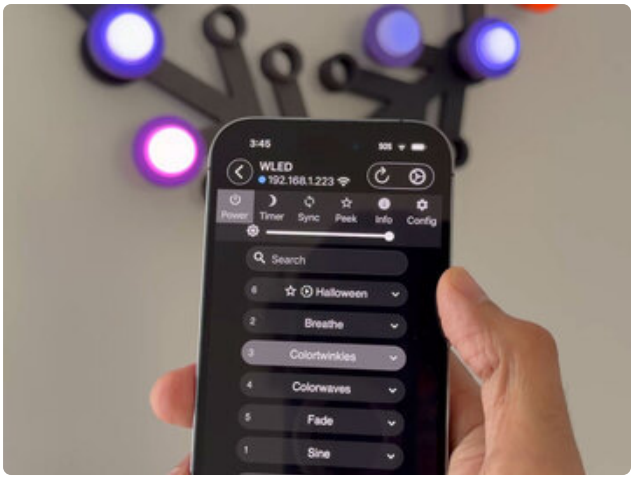
Wall Mount Hanger

Use the Hanger stud to hang the wreath on a wall.

Orient the hanger stud with the top stud of the wreath so the wires can fit through the slits.

Firmly press the hanger stud into the stud on the back of the wreath, making sure wires aren't kinked.

Fit the wreath onto a nail or hook to mount to the wall.



WLED Presets

Use the Presets tab to save your favorite LED animations.

Tap or click on the +Preset button to save them to a list.

Create a playlist by adding multiple presets together durations and transitions.

For full documentation on using WLED, check out the WLED website ().