Bandolier of Light

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https://learn.adafruit.com/bandolier-of-light

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Overview

Build a fun and flexible light-up accessory for your Halloween costume this year using 3D printing, DIY electronics, and a little bit of sewing.

Wear this bandolier with your cyber Tank Girl costume (https://adafru.it/CdY) or any military-inspired look. You can easily wear it as a belt instead of a shoulder sash, and the modular design lets you customize the length that's just right for you.

Portraits by Andrew Baker (https://adafru.it/e3e).

Before you begin, take a look at these prerequisite guides:

- Introducing GEMMA (https://adafru.it/dgH)
- 3D Printing with NinjaFlex (https://adafru.it/tEB)
- NeoPixel Uberguide (https://adafru.it/dhw)
- Battery powering your wearable electronics (https://adafru.it/e4c)
- Rugged wearable electronics (https://adafru.it/e4d)

For this project you will need:

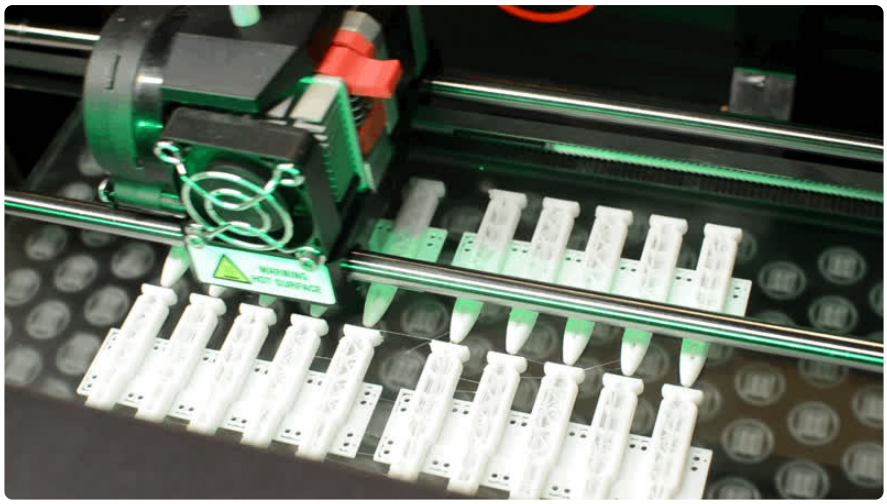
- ~1m of white 60 NeoPixel strip (http://adafru.it/1138)
- 3D printed parts in white NinjaFlex (http://adafru.it/1691)
- GEMMA (http://adafru.it/1222) or Trinket microcontroller
- fabric and sewing supplies
- USB (http://adafru.it/1565) or alkaline battery pack (http://adafru.it/727) with cable (http://adafru.it/260)or extension (http://adafru.it/1131)
- soldering (https://adafru.it/drl) tools and supplies
- stranded wire (https://adafru.it/e4h)
- black gaffer tape

We think these bullets still look fabulous in the daylight and give the costume a graphic pop.

3D Design File

Ninjaflex

Print a bunch of these "McRib" shaped bullet tiles to comprise your bandolier or belt in white NinjaFlex flexible filament. The design is optimized to print with no support material.



STLs

Download the STL files below. Parts are oriented to print "as-is" and positioned in the center of the printer build plate.

Download STLs

https://adafru.it/e4i

Slicer Settings

For the best quality when printing with NinjaFlex, we recommend the following slicing settings:

- Retraction: Off
- Speeds: 45/50
- Extruder Temp: 230c
- Infill 10%
- Raft+Support: Off
- No Heated Bed

Clean Up

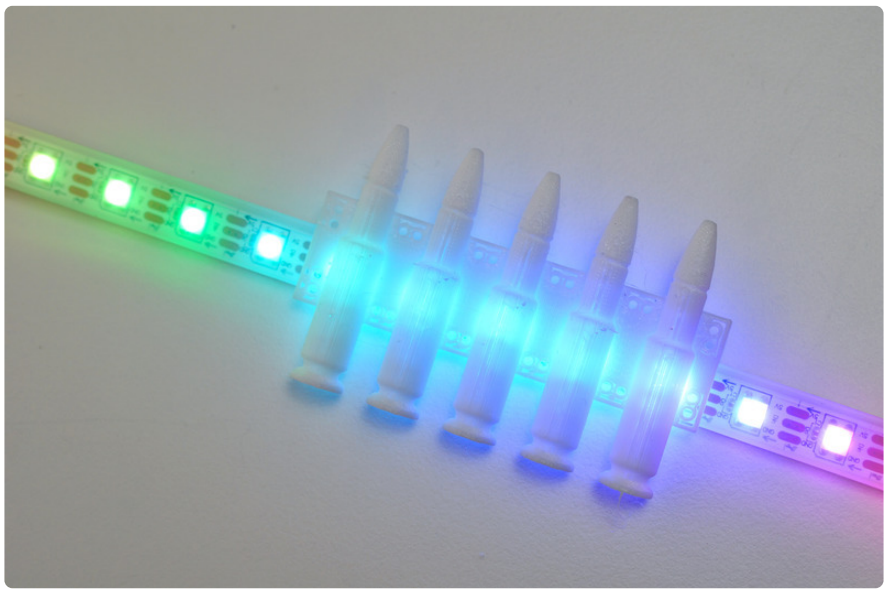
The print may include some string artifacts during the printing process. These bits of string and easily to remove with a pair of sharp scissors. Tug on the bits of material and ship them away to remove the excess material.

Modify Design

The original solids where created in Autodesk 123D Design and are available to customize to match your costume. You can edit the model directly inside your browser or the 123D desktop app.

Customize 123D File

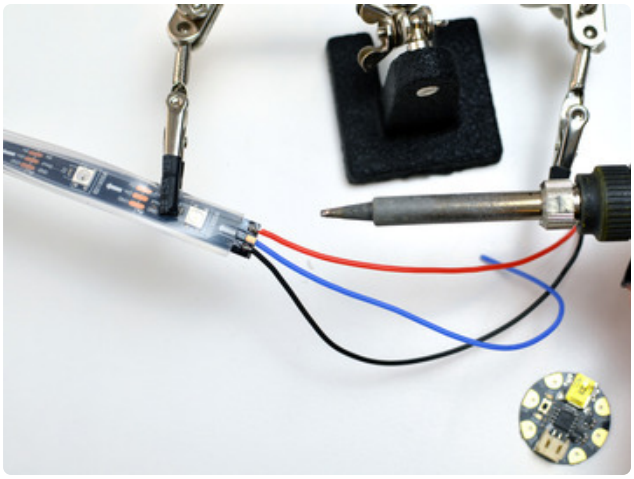
https://adafru.it/e4j

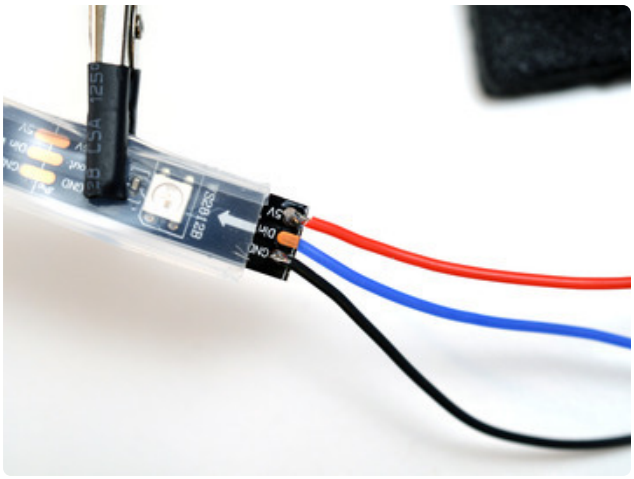


Solder Circuit

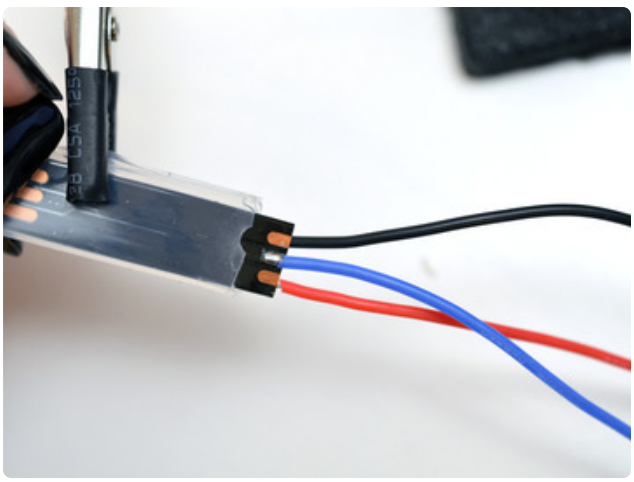
Try on some NeoPixel strip and cut to the size you like. I found that a 1m strip was perfect for my bandolier, but you may need more if you are not a petite lady, or slightly less if you are making a belt.

The 3D printed bullets were designed to line up with 60 pixel-per-meter strip. (http://adafru.it/1138)

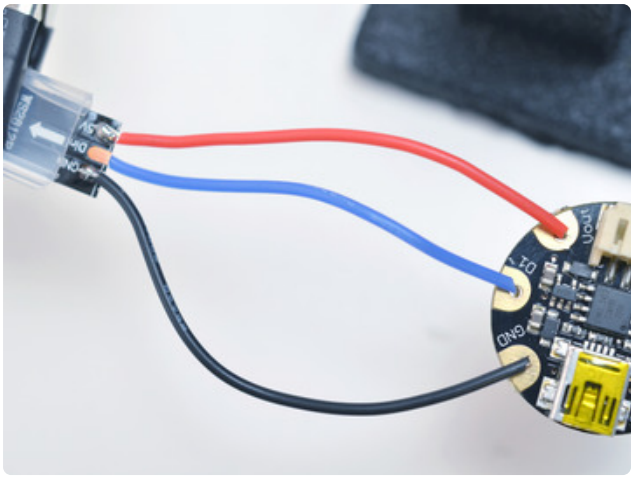


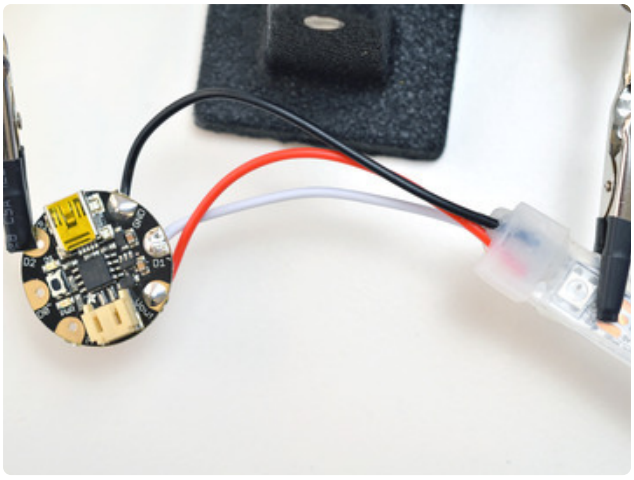


Strip and tin three different colored silicone-coated stranded wires.



Solder the wires to the **input** of your NeoPixel strip, alternating solder joints from the front to the back of the flex PCB to avoid overcrowding.





Solder the other ends of the wires to GEMMA as follows:

GEMMA Vout to NeoPixels 5V

GEMMA D1 to NeoPixels Din

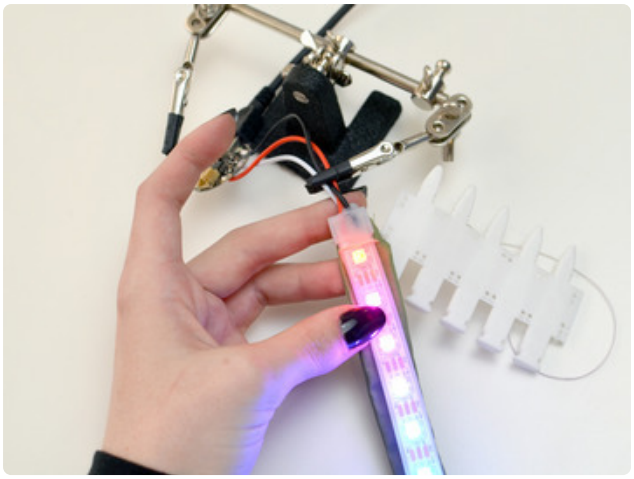
GEMMA GND to NeoPixels GND

Plug in your GEMMA over USB and program it with the light pattern you desire. We suggest modding up the Larson Scanner Shades sketch (https://adafru.it/tgA) or the Cyberpunk Spikes sketch (https://adafru.it/Ce0) to match the number of NeoPixels in your bandolier and the output pin on GEMMA (1).

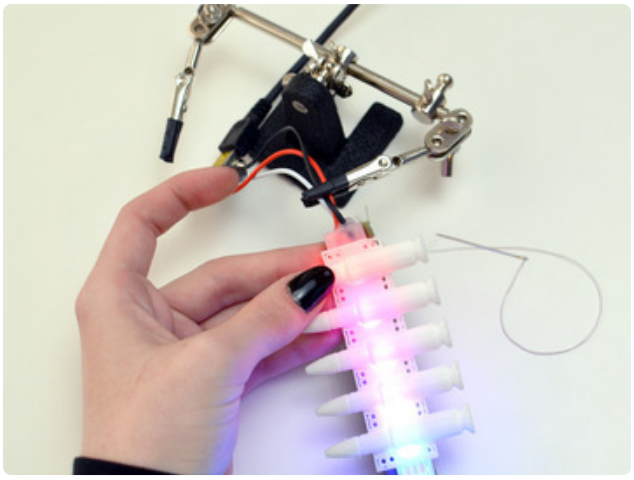
Sew Bandolier

Grab a strip of fabric at least as long as your NeoPixel strip, and a little longer is fine!

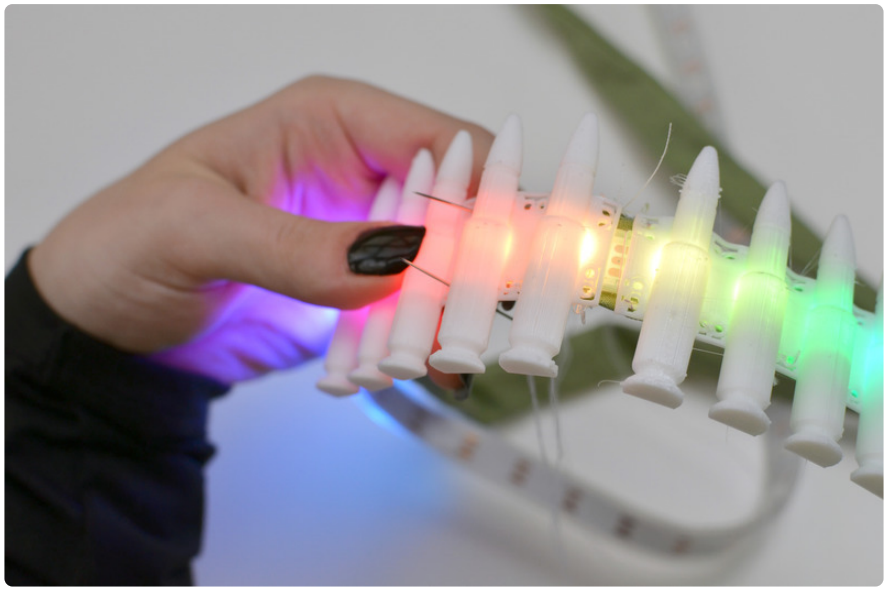
Sew or fold it into a tube that's just a bit wider than your NeoPixel strip.



Use a needle and thread to sew the 3D printed parts to the fabric, sandwiching the NeoPixel strip.



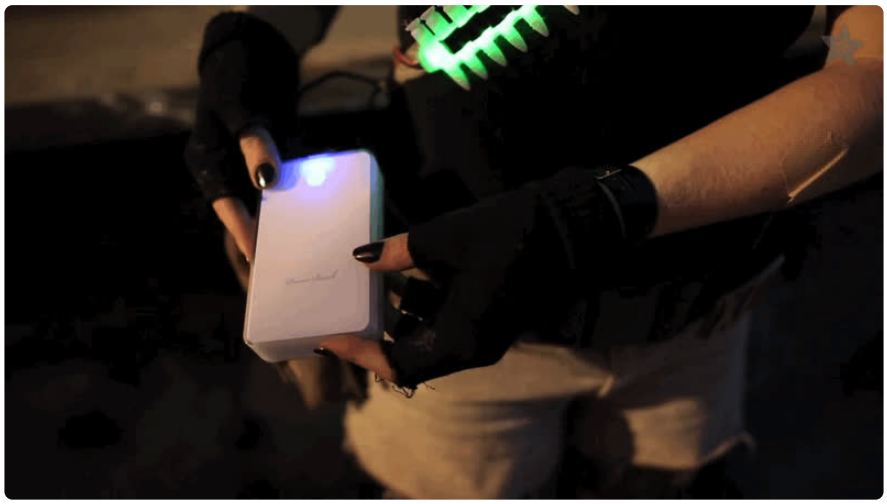
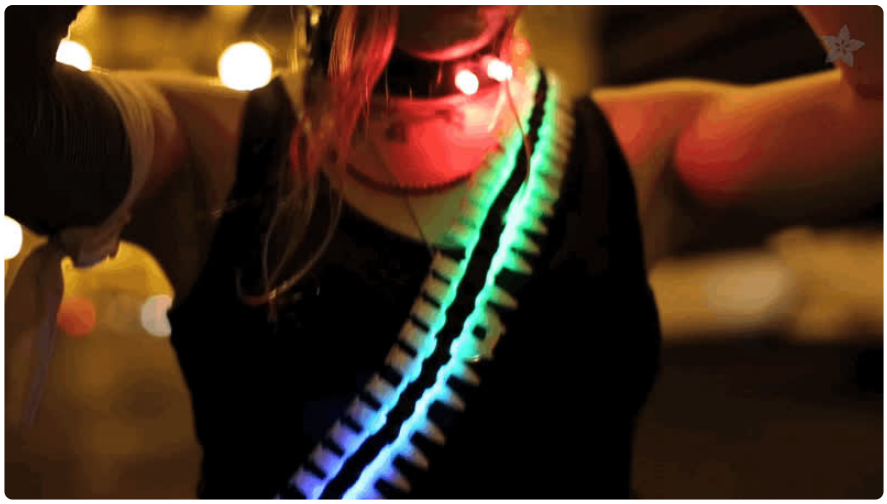
Sure, you could glue the NinjaFlex on with Permatex 66B silicone adhesive, but sewing gives a delicate finish and makes your NeoPixel strip reusable in the end!



Continue down the length of the NeoPixel strip, tiling on more 3D flexible pieces as you go. You should stitch while the strip is off in case you accidentally pierce it with the needle-- strip is illuminated in photos to demonstrate the diffusion.

You may find it easier to use two needles as you sew along the length of the bandolier or belt. Join the ends of your sash, then knot and cut your thread.

Wear it!



You can store the battery pack in one of the pockets of your utility belt. Carry spare charged batteries for the rest of your costume elements, and consider another utility pouch for your cell phone and other going-out essentials. Find more suggestions in the cyber Tank Girl costume guide (https://adafru.it/CdY).