LED Ribbon Shoes

Created by Becky Stern

https://learn.adafruit.com/led-ribbon-shoes

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Overview

Mod a pair of shoes to light up! It's easy to add LED ribbon to any shoes for a twinkly pair of kicks. The ribbon's battery box has a button for changing between steady on, blinking, and slow fade modes. This tutorial will cover adhering the ribbon to a pair of winged ballet flats, and attaching any extra ribbon to a spare battery case for use either on the other shoe or another project.

This is a great beginner project!

Tools & Supplies

For this project you will need:

- Shoes: we used a pair of Adidas JS Wings ()
- Litex LED ribbon in white (http://adafru.it/1398) or black (http://adafru.it/1397) - two reels or one reel and a spare battery case (http://adafru.it/1355)
- Double-stick tape
- Painter's tape (blue tape)
- E6000 craft adhesive
- Plain thread to match your shoes (or clear)

You will also need the following tools:

Use a sewing needle (http://adafru.it/615) to affix the battery pack, and even the ribbon, if you so chose!

Sharp scissors are a must.

Tweezers (http://adafru.it/421) help put everything exactly where it goes.

Affix to Shoes

Prototype your design with double-stick tape. This way you can decide where your battery pack will go, and the path your ribbon will take along the shoe, and you can easily readjust as necessary.

Wait to cut the excess ribbon until later.

While planning your design, put on the shoes and see where they bend when you walk. Space your ribbon so as to avoid placing the LEDs directly where the shoe bends. The connections between the soft ribbon and the hard LED epoxy blob are the most fragile part of the ribbon, and repeatedly flexing these connections may break the circuit.

If your ribbon must span a flexing area, avoid applying glue to the span, so the ribbon isn't forced to bend as sharply as the shoe.

Start with the battery pack. Thread a needle with clear thread (black shown in this step for visibility), double it over on itself, and tie the ends together in a knot.

Pull the needle through the plastic loop on the battery pack, and pull the thread most of the way through.

Separate the doubled thread and pull the needle between them, then pull the thread taut. Now the thread is looped securely around the battery pack!

Stitch through the shoe a few times to affix the battery pack, tie a knot, and snip the excess thread. See how the clear thread is barely noticeable? (click photos to enlarge)

Remove the double-stick tape one section at a time, getting ready to glue.

Our preferred glue for this project is E6000. It dries clear and is flexible, and it sticks to many materials. You may have to experiment with adhesives to find the right one for your shoes, or even sew the ribbon on if your shoes allow!

Use tiny strips of painter's tape to clamp the ribbon to the shoe while the glue dries.

Allow the glue to dry for 24 hours before removing the tape. Trim the excess ribbon. You can connect a spare battery pack to the excess ribbon, and depending on how much ribbon you use on each shoe, you could potentially get away with one reel total. These winged ballet flats use 3/4 of a reel each (two reels total with two extra bits left over).

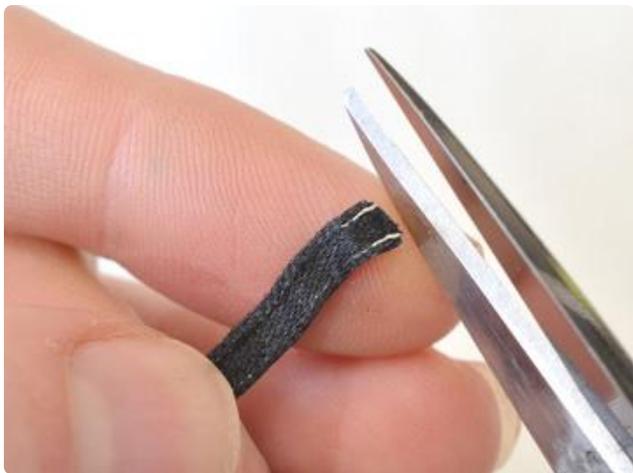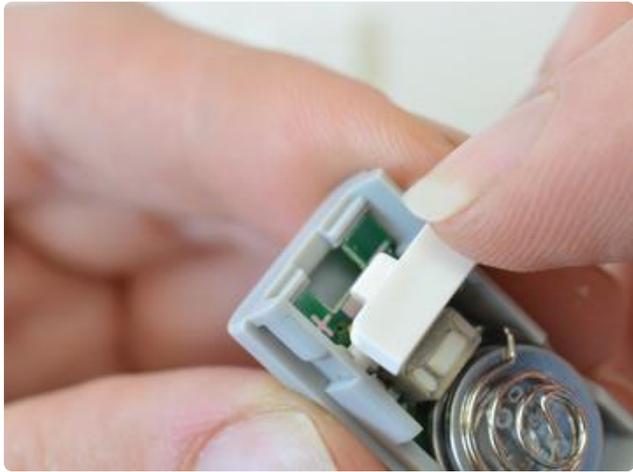# Connecting Battery Case
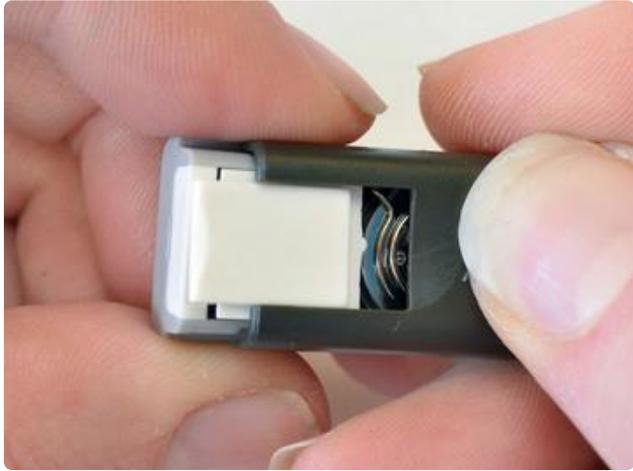
To open the spare battery case, slide the dark grey cover in the direction of the molded arrow, and set it aside.
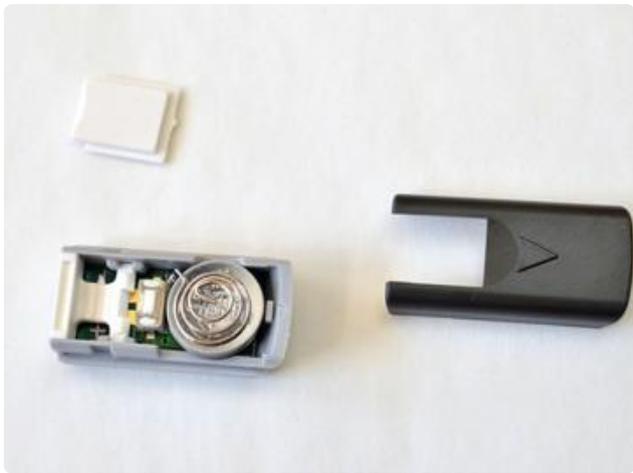
Also remove the white button cover. The batteries have a tendency to all out during handling, so keep a keen hand ready or take them out and set them aside as well.

Lift the small white lever to expose the printed circuit board inside.

Take a look at the cut end of your excess ribbon. See how every inch or so, there's an exposed section of conductive thread? That's the part you want to insert into the battery box, so trim the ribbon to position an exposed section near the end.
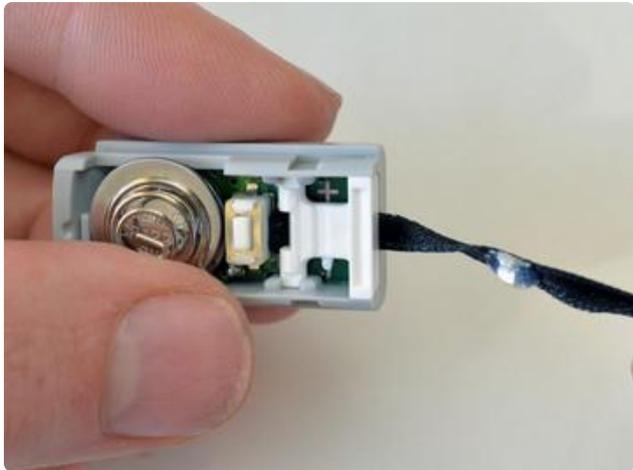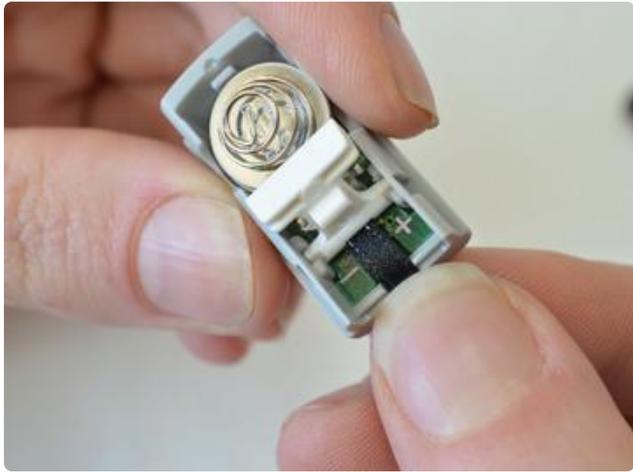
Flip the ribbon so the exposed threads are facing down, and slide the ribbon into the battery box as shown. Close the lever over the ribbon, insert the batteries, and press the button to test it.

LEDs are polarized, so the ribbon will only work when plugged in one way. If it doesn't light up at first, try flipping the ribbon over. Plugging it in backwards won't damage the LEDs.
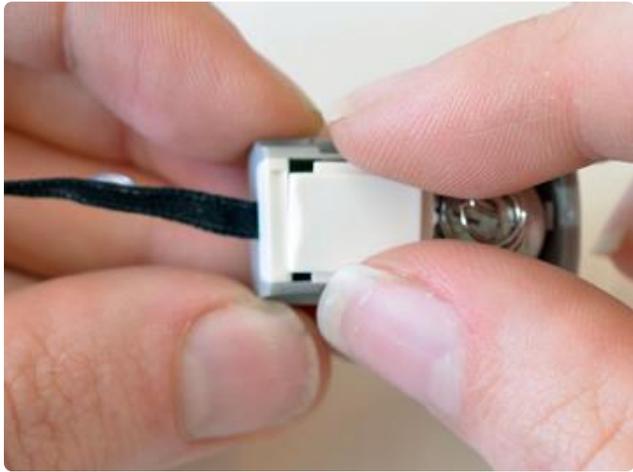
If your ribbon lights up, replace the white button cover and outer grey shell. You're done! Now you can use the ribbon for another project, or the other shoe!
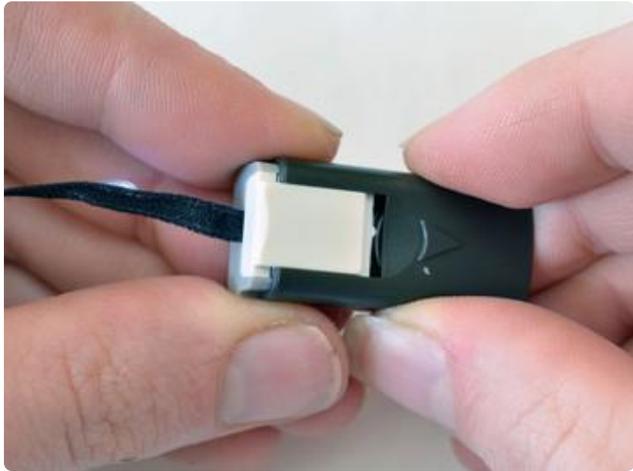
Wear 'em!

Be gentle with your new shoes! Turn them off if it starts to rain. As mentioned during the design phase, watch out for wear in the ribbon where the shoes bend. Now go show them off!