

Re-fashioning the Future

Aileen Drohan



Workshop 2: conductive thread and fabrics

Conductive thread

Conductivity is the degree to which a specified material conducts electricity



Madeira HC-12 silver thread with 235 dtex.

Resistance: < 1 ohm per metre

Available from:

[HC 12 150m SAMPLE \(High Conductive\)](#)
[| Serigraf.com](#)

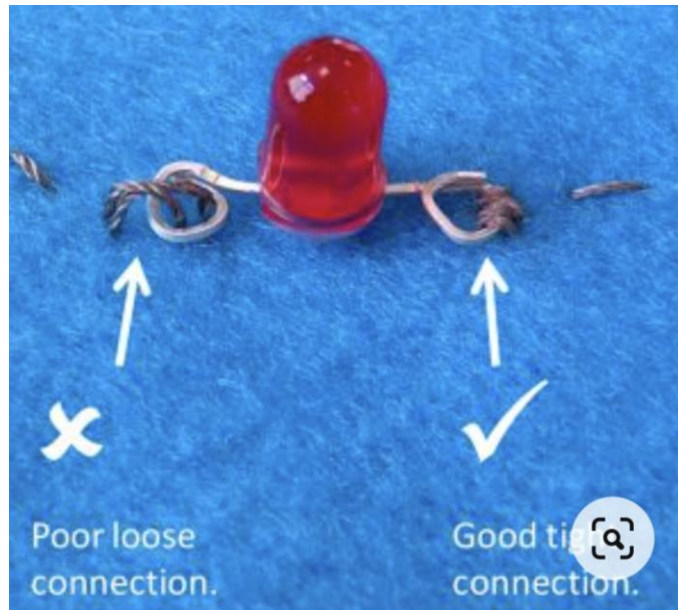


Stainless Steel thread by Adafruit 603
(Measures 0.4mm thick, 3 ply thread)

Resistance: 1.0 ohm per inch

Available from: [603 Adafruit](#) | [Mouser Ireland](#)

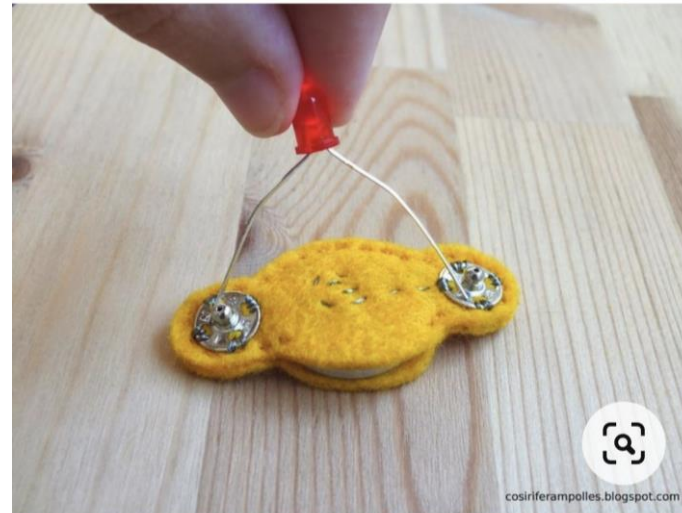
Conventional LEDs Vs. Lilypad LEDs



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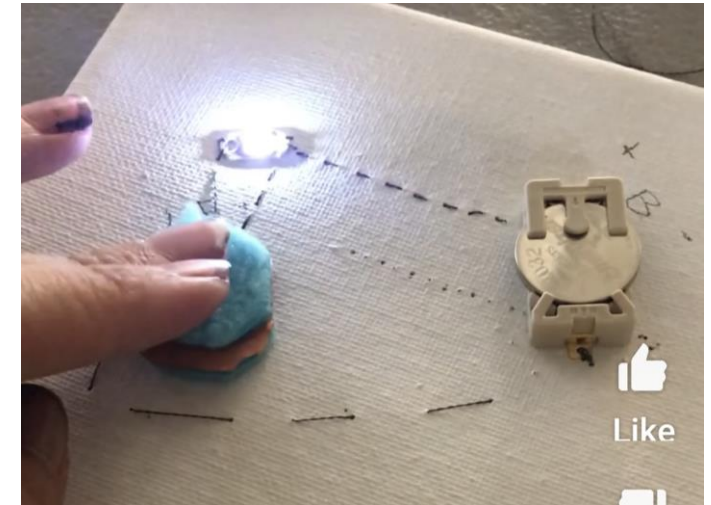
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Textiles**



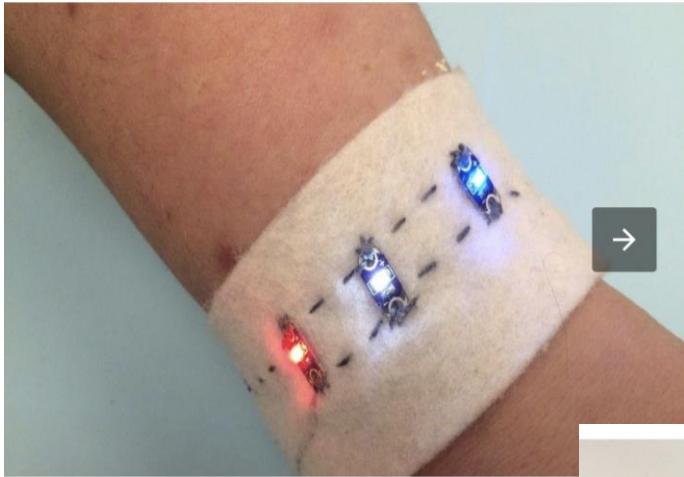
Article from cosiriferampolles.blogspot.com....

**Tutorial: portapilas de
fieltro**

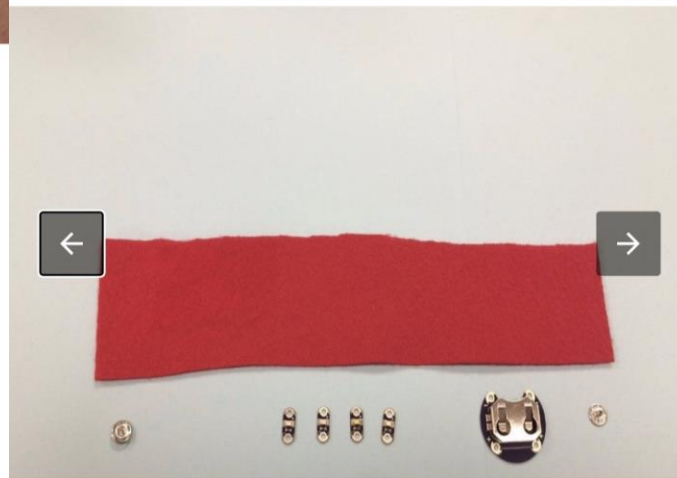


Like

Lilypad LEDs



These LEDs are wired in Parallel, with all the GND (-) petals connected together and all the Power(+) petals Connected together



Integrating Coin cell batteries



Article from [flickr.com](#)

Lsaercut stretch battery pocket



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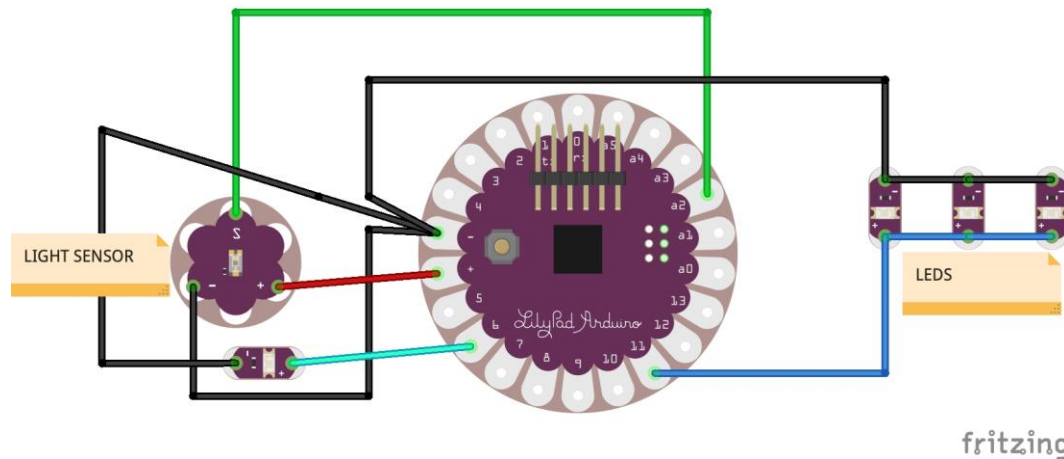
Laser Cut Coincell Battery Pocket...



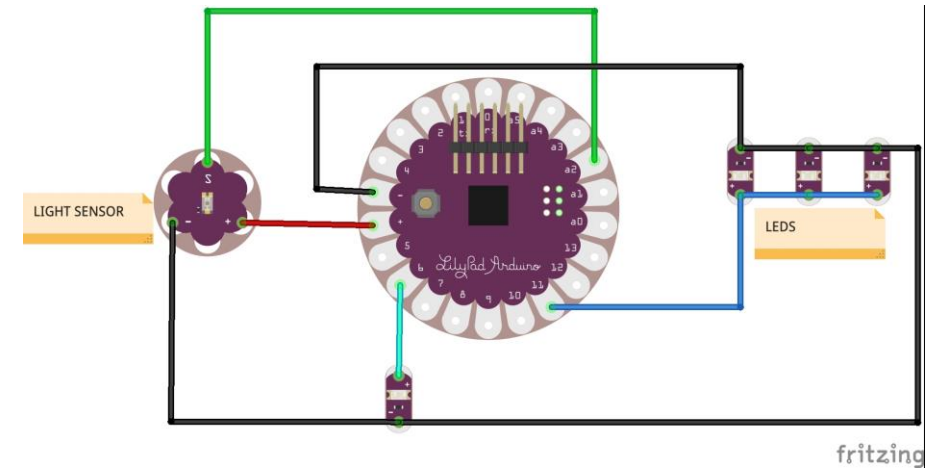
From [cosiriferampolles.blogspot.com....](#)

Llavero de fieltro con botón On/Off y leds

Designing your circuit



Light sensor - messy wiring



Light sensor - better wiring

It's always good to sketch your circuit out first. Pen and paper works just fine.

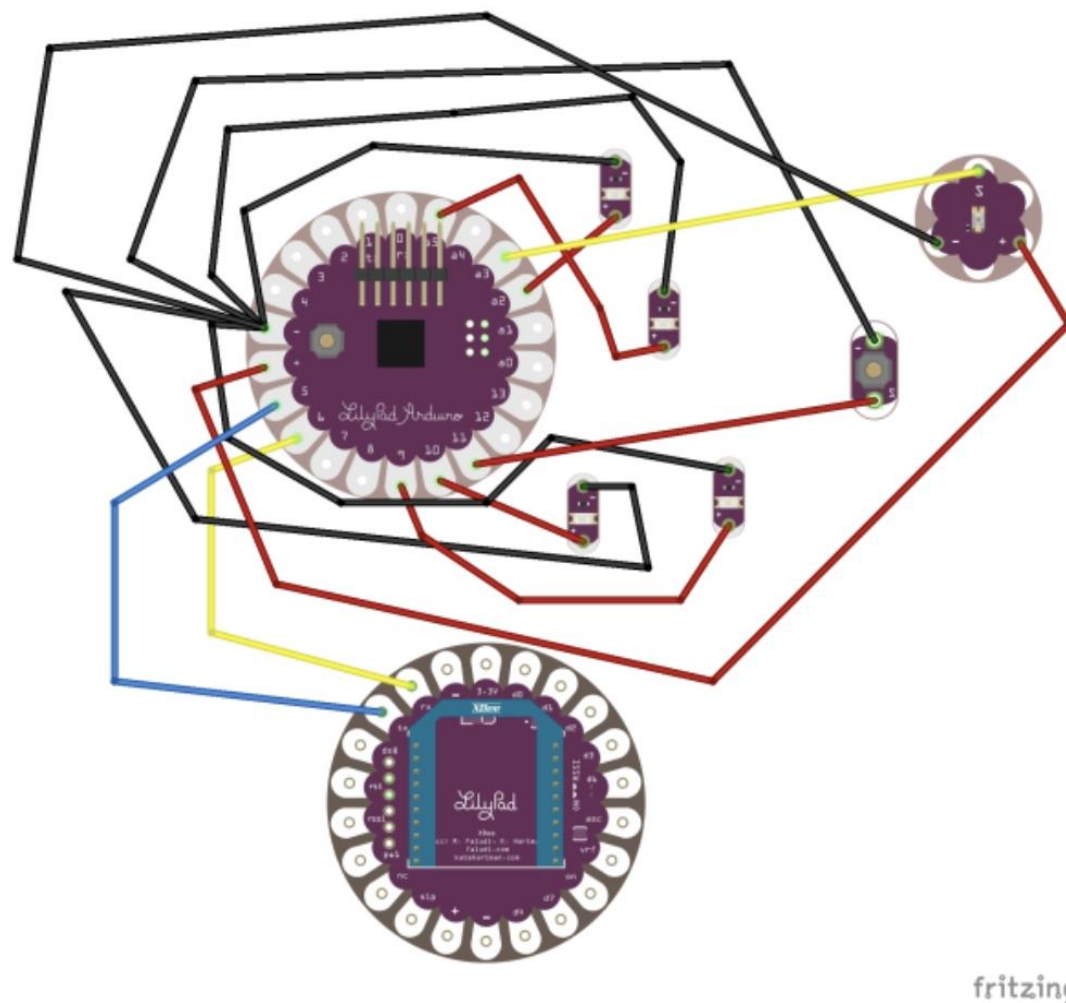
The circuits above are the same.

The left circuit when sewed would have 4 threads crosses that could potentially cause shorts, if not insulated.

The right design only has one and all the grounds are connected together in what we call a ground rail.

Always try to minimise the number of conductive pathways that cross over in your design.

General Rule:
Avoid this



Conductive thread sewing



Crossed uninsulated connections will cause electrical shorts.



[Sewing with Conductive Thread - learn.sparkfun.com](https://learn.sparkfun.com)

Insulating conductive thread

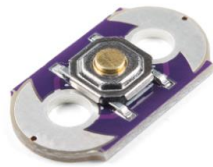
Common methods used include:

- Nail polish or fray check on the ends as conductive thread loves to fray and can cause shorts
- General purpose Fabric Glue
 - *I've found it to stiffen and stain the material, slow to dry and needs a minimum of 2 coats*
- Stretchable fabric glue
 - *I've found it not to be as stiff as general purpose fabric glue, still stains fabric, slow to dry and needs a minimum of 2 coats*
- Iron on binding
- Placing fabric patches between the conductive pathways
- Sewing the conductive thread into binding and folding the binding over
- Insulating with a satin stitch



Fabric Button Switch

Soft Buttons can be made with conductive fabric and a spacer material



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<https://www.kobakant.at/DIY/?p=48>



Thank you

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