Electronic textile bag

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Difficulté **Moyen** | Durée **6 heure(s)**

Catégories **Vêtement & Accessoire, Électronique, Machines & Outils, Robotique** | Coût **25 EUR (€)**

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Introduction

In this tutorial, you will learn how to create an electronic textile bag, to be used in the context of educational activities on electronics and coding.
A French version of this tutorial is available online / Une version en français de ce tutoriel est également disponible en ligne.

Matériaux

- conductive thread (about 13 meters)
- 2mm thick textile (or thinner)
- 1 x Led
- 1 x 8 ohm speaker
- 1 x mini vibrating motor
- 1 x photoresistor
- 1 x textile bag
- 1 x Arduino board + power cable
- 6 x jumper wires
- 6 x small safety pins (around 4 cm long)
- 9 x metal snap buttons (make sure they are not coated and are conductive)
- 1 x 250 ohm resistor (or similar)
- electric wire (about 1 meter)

Outils

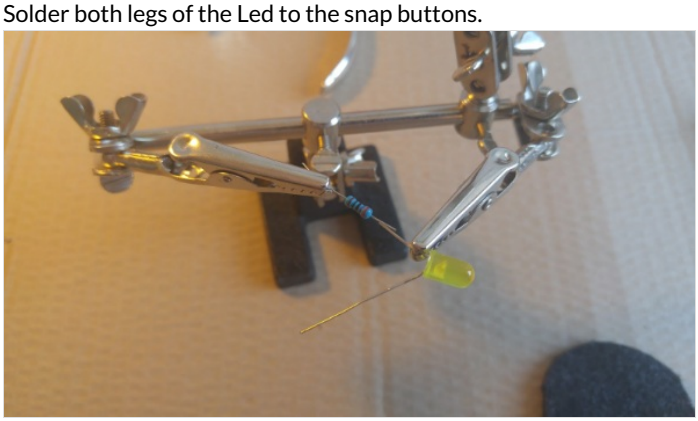
- 1 x soldering iron
- Pc with Arduino IDE installed
- needles and thread

Étape 1 - Cut 4 round textile patches

One of the patches must be slightly bigger than the other 3.

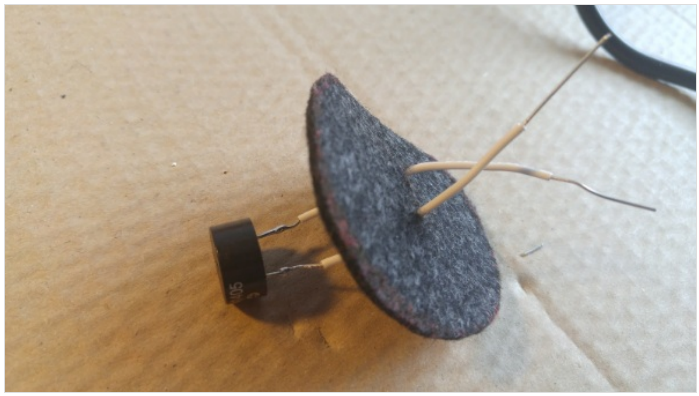
Étape 2 - Prepare the Led patch

Shorten the longer leg of the Led and solder a 250 ohm resistor to its end.
Insert both legs of the Led into the textile patch. Do not leave any space between the textile patch and the base of the Led.
Sew the bottom part of two snap buttons to the textile patch. These will serve to connect the legs of the Led.
Solder both legs of the Led to the snap buttons.



Étape 3 - Prepare the speaker and the mini vibrating motor patches

Apply the same procedure as the one described above, to create the patches for the 8ohm speaker as well as the one for the mini vibrating motor.
You may need to use some electric wire to extend the terminals of the electronic components and be able to solder them to the snap buttons
Neither the mini vibrating motor nor the speaker need a resistor.

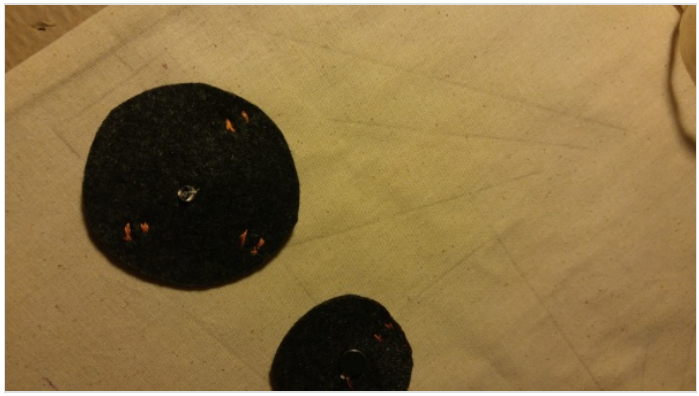


Étape 4 - Prepare the photoresistor patch

Use the biggest textile patch for the photoresistor.
First insert both legs of the photoresistor into the textile patch.
Then start the soldering. Solder a 1kohm resistor as well as a piece of electric wire to the negative leg of the photoresistor (the shorter of the two legs).

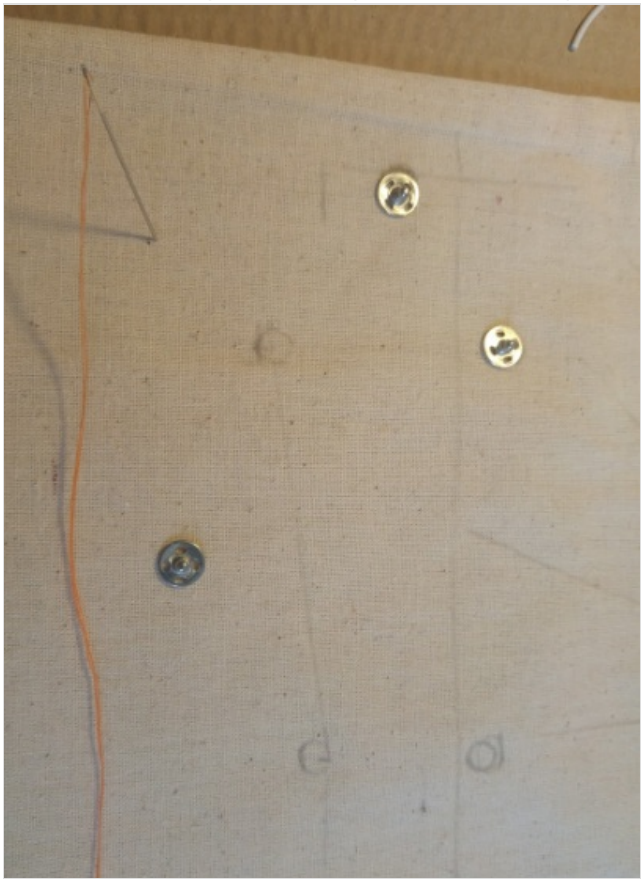
Étape 5 - Choose the design of your e-textile bag

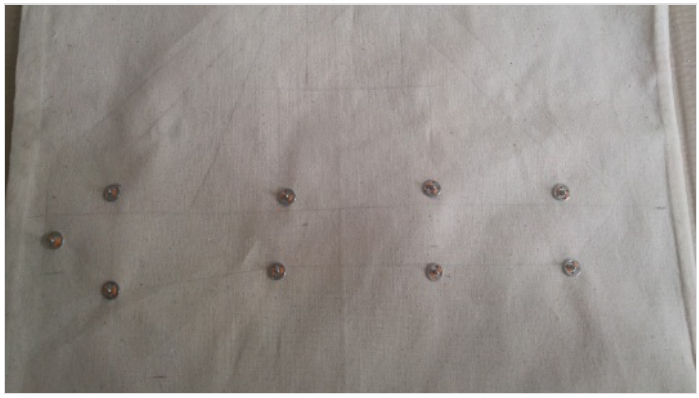
Position all 4 patches on the front of the textile bag, and draw lines with a pencil, to determine where you will be sewing the conductive thread, and where you will position the arduino board. This will also give you a rough idea of how much conductive thread you will need to use to connect all patches to the board.
All negatives will be connected together by a piece of conductive thread which will run from one side of the bag to the other, and which finally reach the board.



Étape 6 - Sew the top of the snap buttons on to the textile bag

Draw with a pencil the position where the snap buttons will need to be attached to the textile bag, then sew them to the bag.
Remember that the photoresistor patch will need 3 snap buttons, whereas all other patches will need only two.

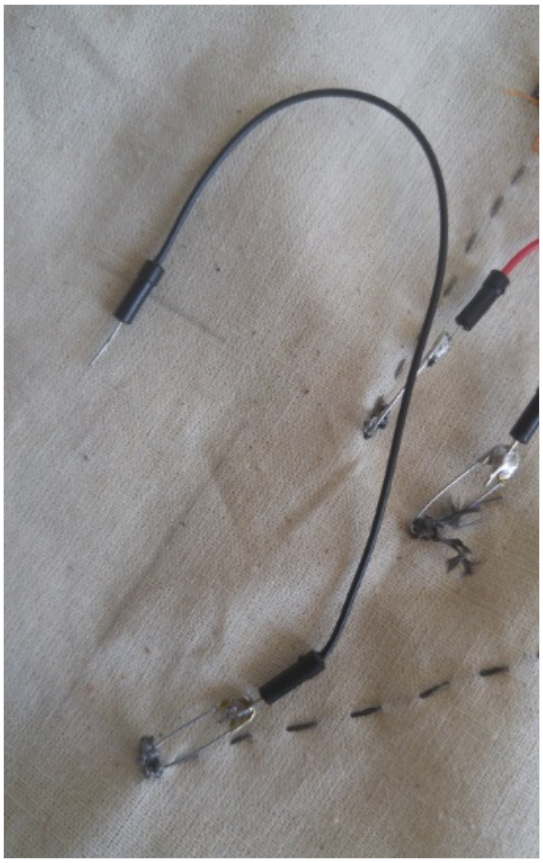


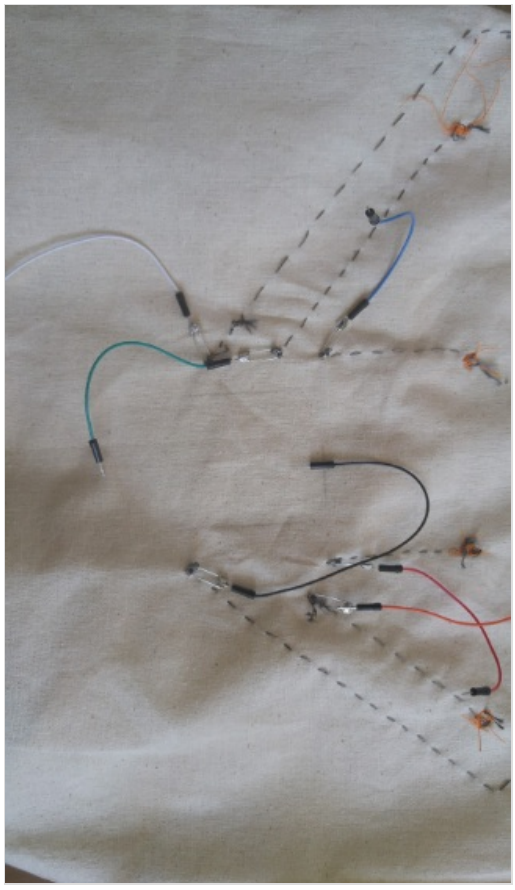


Étape 7 - Sew the conductive thread to the textile bag

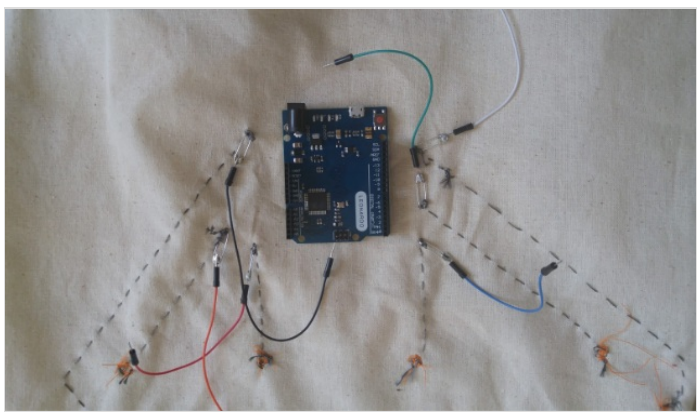
Once all snap buttons are in place you need to make all necessary connections using the conductive thread
Start by sewing the wire that connects all negatives together.
At the end of each conductive thread, you will need to attach a safety pin. This will be soldered to a jumper wire which will eventually connect the conductive thread to the Arduino board.

Étape 8 - Solder jumper wires to the safety pins

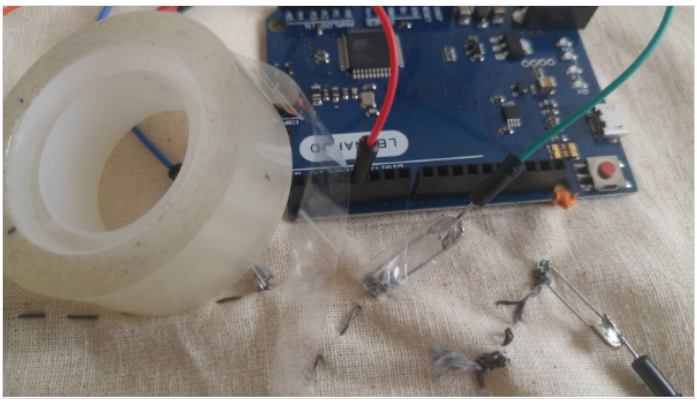




Étape 9 - Sew the Arduino board to the inside of the textile bag



Étape 10 - Cover all safety pins with some tape to avoid short circuits and unwanted connections



Notes et références

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