





Biped dancing robot

Tito is a Biped dancing DIY robot, derivative from Zowi and Bob, basically has been adapted to an standard Arduino UNO board with easier connections and supports.

 Difficulty **Medium**

 Duration **10 hour(s)**

 Categories **Electronics, Play & Hobbies, Robotics**

 Cost **45 USD (\$)**

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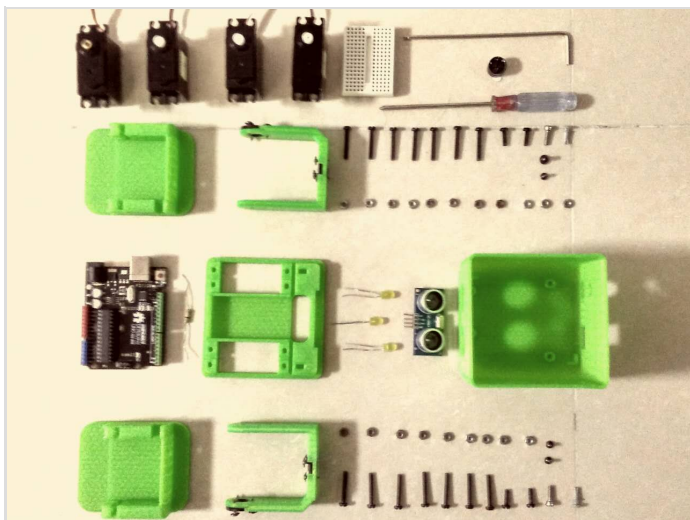
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Introduction

Tito is a Biped dancing DIY robot, derivative from Zowi and Bob, basically has been adapted to an standard arduino UNO board. original project Zowi <https://github.com/bqlabs/zowi>



Materials

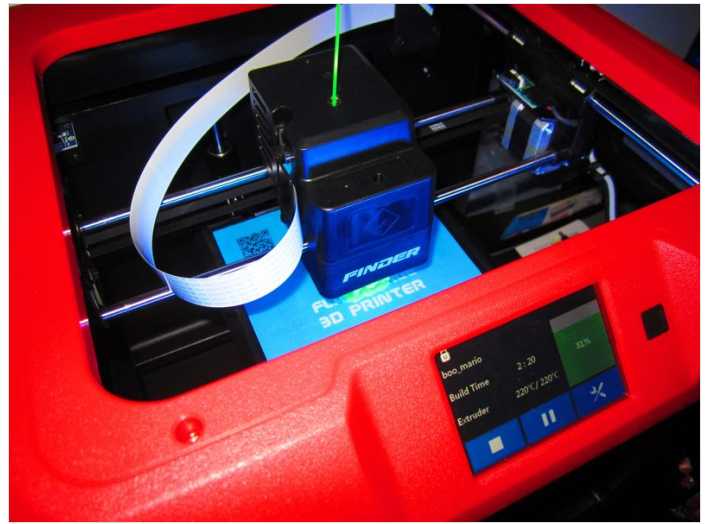
Arduino UNO Nano breadboard or Buzzer Futaba servo S3003 x4
HC-SR04 Ultrasound sensor Powerbank (optional) Nut M3 x20
Screw M3 x20 3d print Head 3d print Base 3d print Leg x2 3d print
Foot R 3d print Foot L

Tools

3d printer, allen key and screwdriver

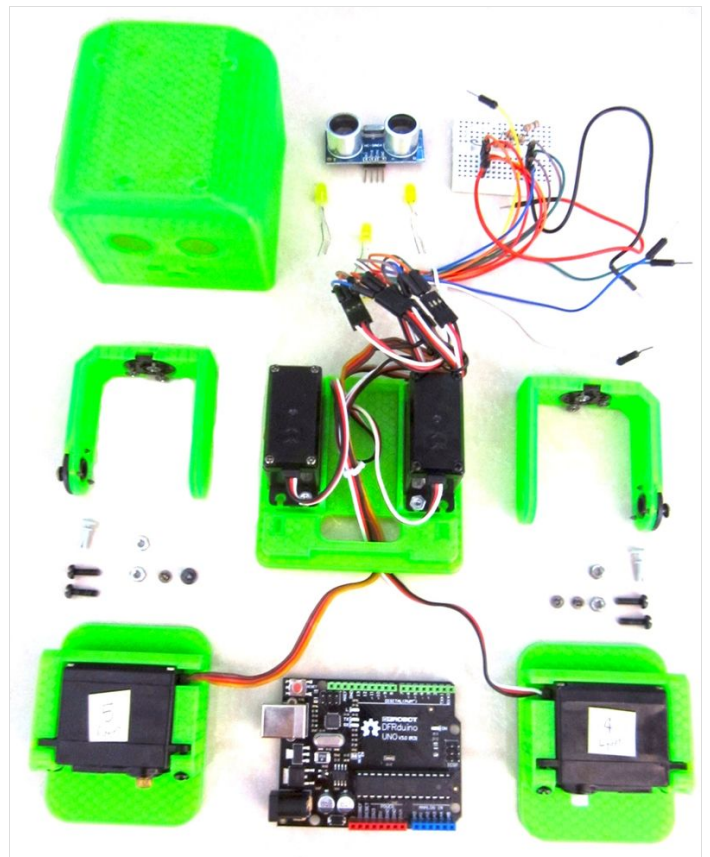
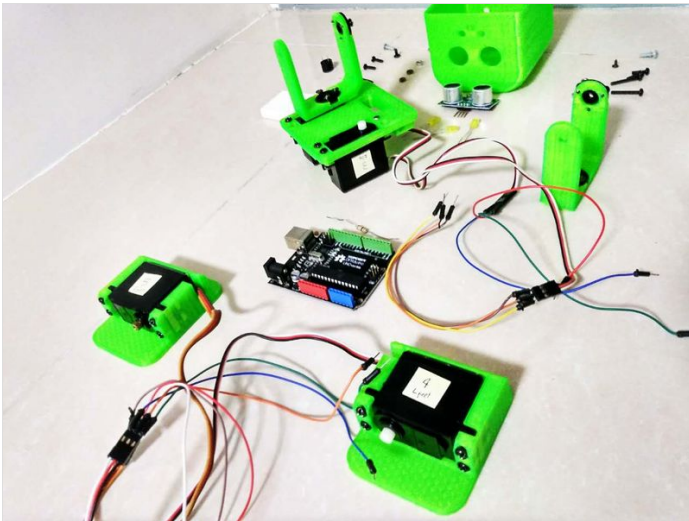
Step 1 - 3D print parts

3D .stl files here: <http://www.thingiverse.com/thing:1378605> Find a way to 3d print the parts, they are designed for no supports so is very easy to print with 20% infill and 0.2mm resolution.



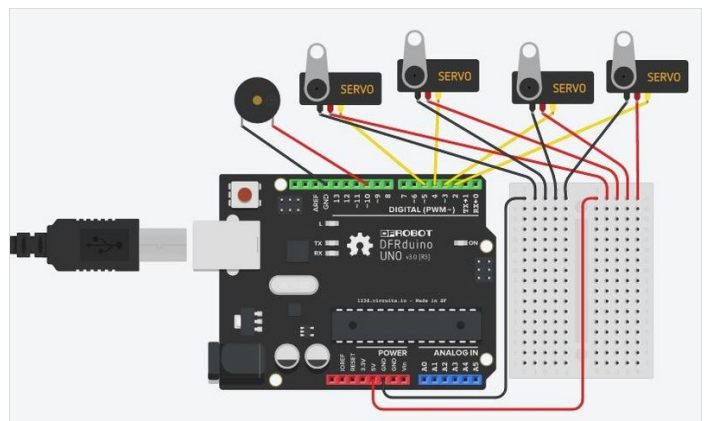
Step 2 - Pre assemble

There is many ways to build Tito, but one recommendation is before the connect the servos is to assemble the servo disk pieces to the legs, then put the servos in the body and the feet..



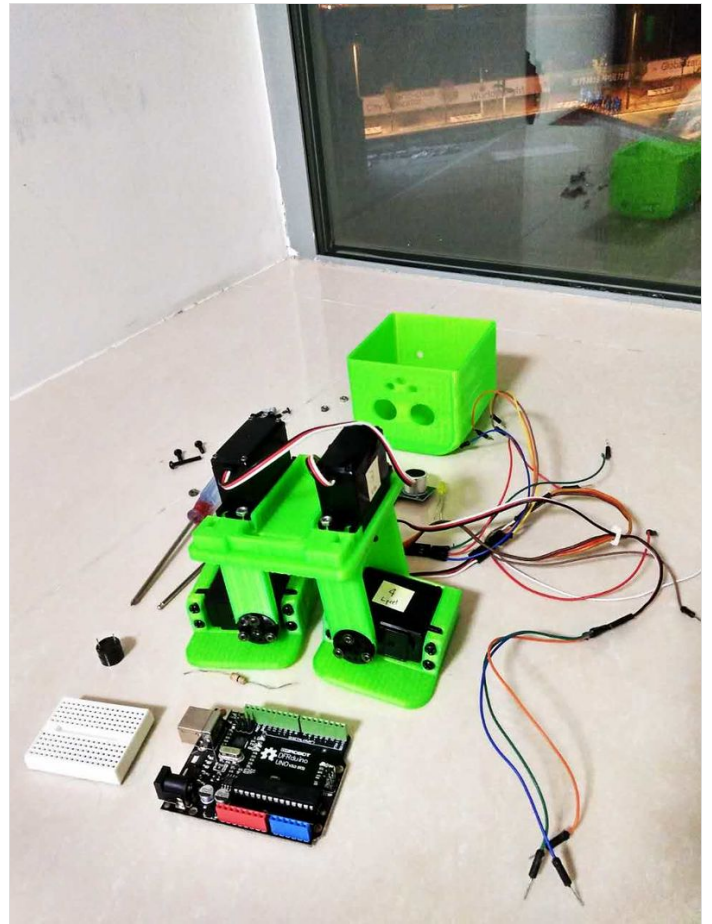
Step 3 - The Schematic

Follow the picture for the connections. HC-SR04 Ultrasound sensor (not connected in the schematic; trig for pin 8 and echo for pin 9). During the making process you may need to disconnect and connect constantly so just keep this schematic present for further fixes.



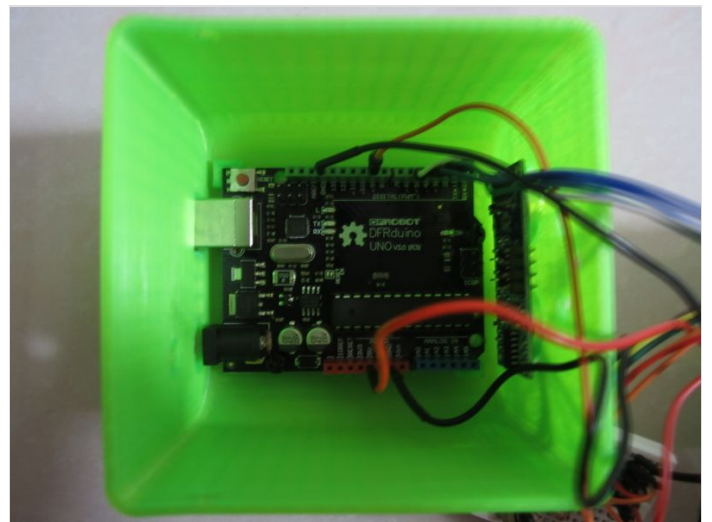
Step 4 - Test the position of the servos

In the picture the cables are disconnected but the idea here is to upload a code to the Arduino board (<https://github.com/agomezgar/tutoriales/tree/master/tutorialZow i3/prepararServosparaMontaje>) that will put the all servos in 90 degrees and then fix the right angle for the crank discs in the body and the feet. Tito should be in a neutral position like the photo. then you can fix all the servos with the screw axis.



Step 5 - Assemble Arduino board

This design make it easy to fix any Arduino Uno compatible board (in my case a DFRduino UNO) in the head part, you can use up to 4 screws.



Step 6 - Final assembly

If all connections are secured you can close the head part and fix it to the body using the lateral screws.



Step 7 - Programming

All libraries and Arduino source code are in this Github repository: <https://github.com/bqlabs/zowi> Just connect your USB cable to Arduino and upload the codes. There are many programmed movements for the robot like walk different directions, raise, tilt and dance.



Notes and references

3D print files: <http://www.thingiverse.com/thing:137860> Code: <https://github.com/bqlabs/zowi>