Smart Textiles Workshop

Week 6: Motors & Mobility

Tonight's Code

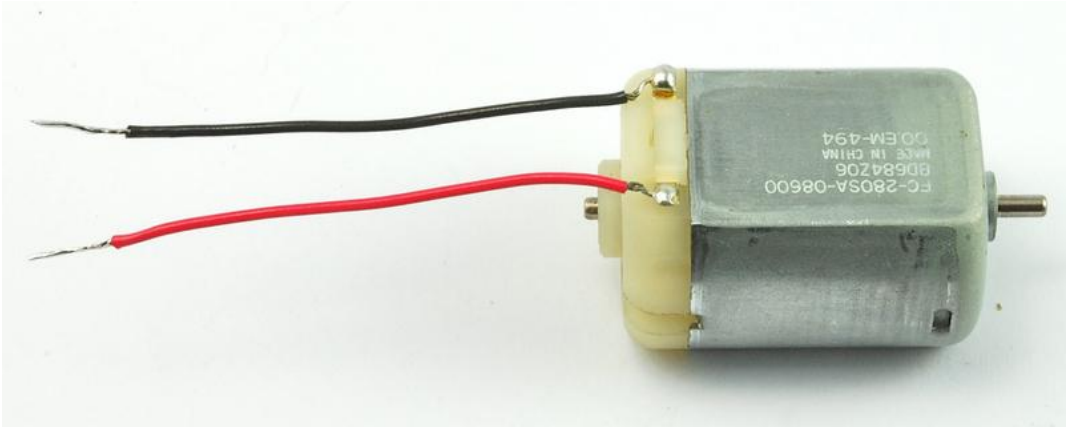
Tonight's code can be found on the class Github repository.

Check the class site for a link.

Circuit Diagram

Connecting a servo motor.

Simple DC Motors



DC toy motor

DC motors

DC motors use electromagnetism to convert electrical current to movement.

These motors spin very fast if they are not carrying a load (often hundreds, if not thousands, of revolutions per minute!)

Unfortunately, they are also very weak unless used with gears or pulleys.

Servo motor

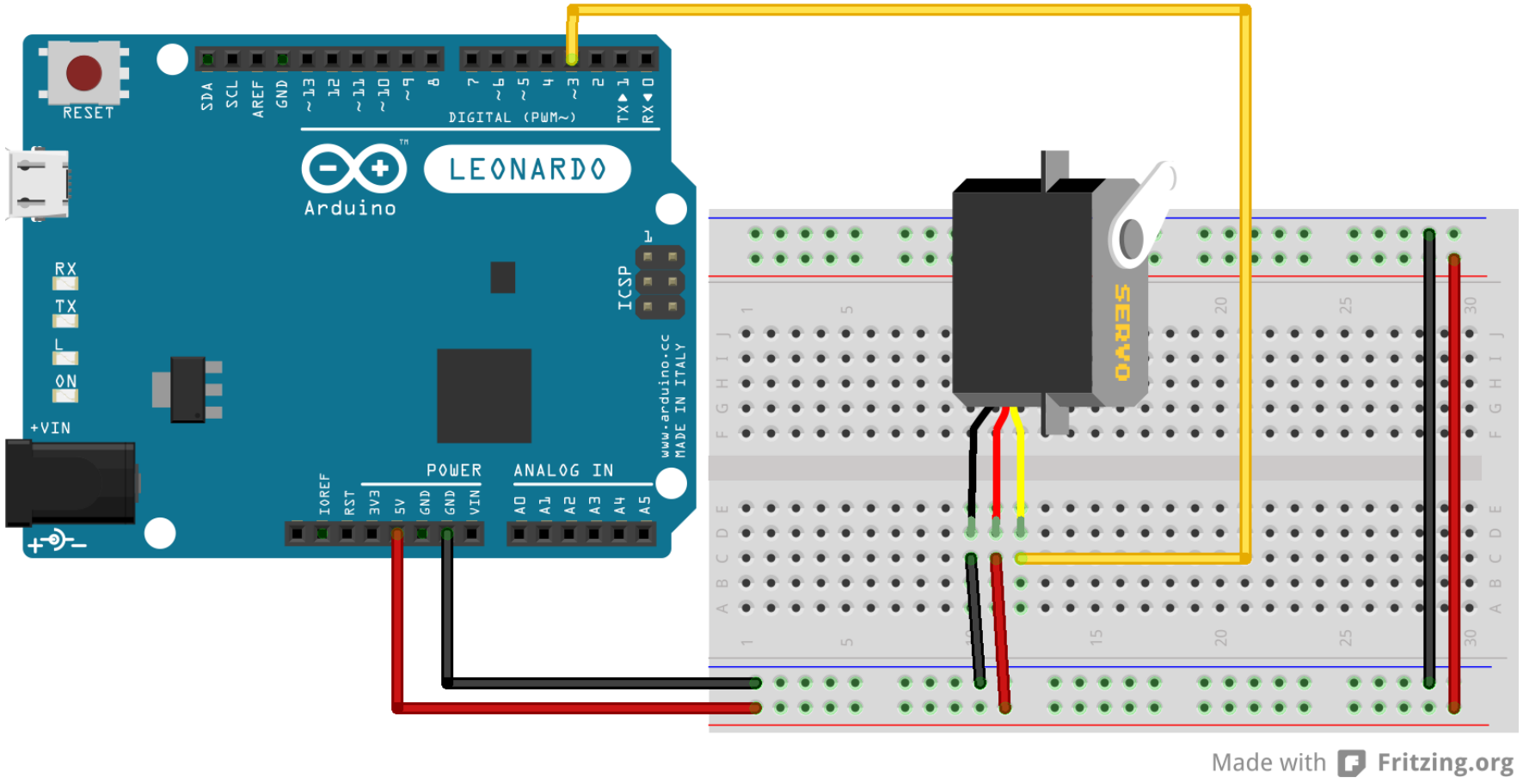
Servo motors are geared DC motors which are stronger, slower, and easier to control with the Arduino.

Standard vs. Continuous Rotation

Standard servos are able to rotate from 0-180º. When they are given a new degree, they will rotate to that point.

Continuous rotation servos can rotate freely in 360º. The speed and direction of rotation is controlled by the “degree” given to it. Ideally, 90º

Connecting a servo motor



Servo Library

Libraries are collections of code which are intended to make difficult tasks easier.

To work with servo motors, we will be using a library called Servo.

To add the library to your sketch, use:

Sketch > Import Library… > Servo

“Cutting the cord”

Once your code has been uploaded to the Arduino, you can use an external power supply like a battery or AC adapter to power it.

IMPORTANT!

Do not connect external power when connected to USB.

Choosing a power supply

- 9-12 volts
- 250 milliamps (minimum!)
- Center positive, 2.1mm barrel plug