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Group 8
Electric skateboard

This project, we will be making a electric skateboard. The project can be really simple easy to do but if you feel like not enough for you we can add more features into the skateboard.

If you read the practicum carefully the requirement is far more important that your project be complete and functioning than original or complex. This project is seem to be in **easy category** requirement I think 2 credits hours is good. I'm not aiming for difficult project that's up to you. The project also meet the requirement instructor ask:
Have one or more sensors (inputs)
Have one or more actuators (outputs)
Have one or more processing modules which control actuators based on sensors.
Use a two or more layer PCB (We sure got this mini arduino and arduino)
Use 25% or more surface mount components that can be hand or reflow soldering (yah sure wiring)

With 4 people in our group and more than a month work on this project. I think we can nail it for sure. The electric skateboard can be assembled without any electric or computer engineer background. However, we are future engineers I suppose we can design the smart and better electric skateboard.

What do i mean by smart electric skateboard.
When braking instead putting the board on the reversal we can use the board to generate electricity to charge the battery give the board a longer range and energy efficiency. That is the idea but we see how it goes during the project.

Material need:
Skateboard Longboard (I have a long board)

Motors : I suggest we use Hub motor because I did a research about belt and hub . I found that when belt motors dont have power, it will put drag to the skateboard, making it hard to move around.

Mini Arduino: For controller we can 3d print the enclosure for the controller. In the citation below there are already some 3d prints model we can create our own too.
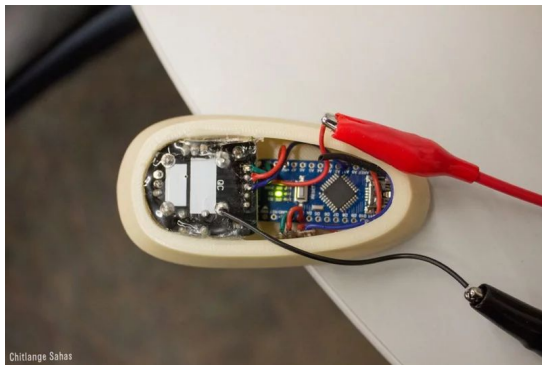
Arduino: for receiving signal and execute command when receive signal from controller
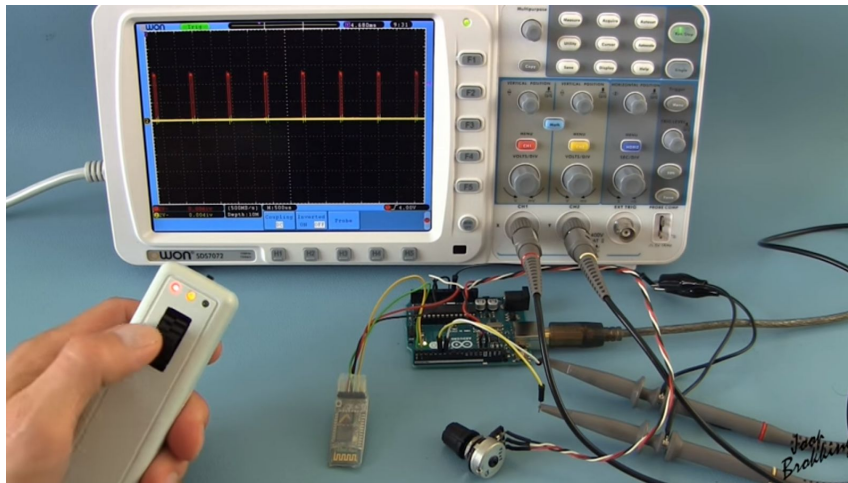
ESC: speed controller for motor
Battery: I recommend 2x 8000mAH 7.4V Lipo
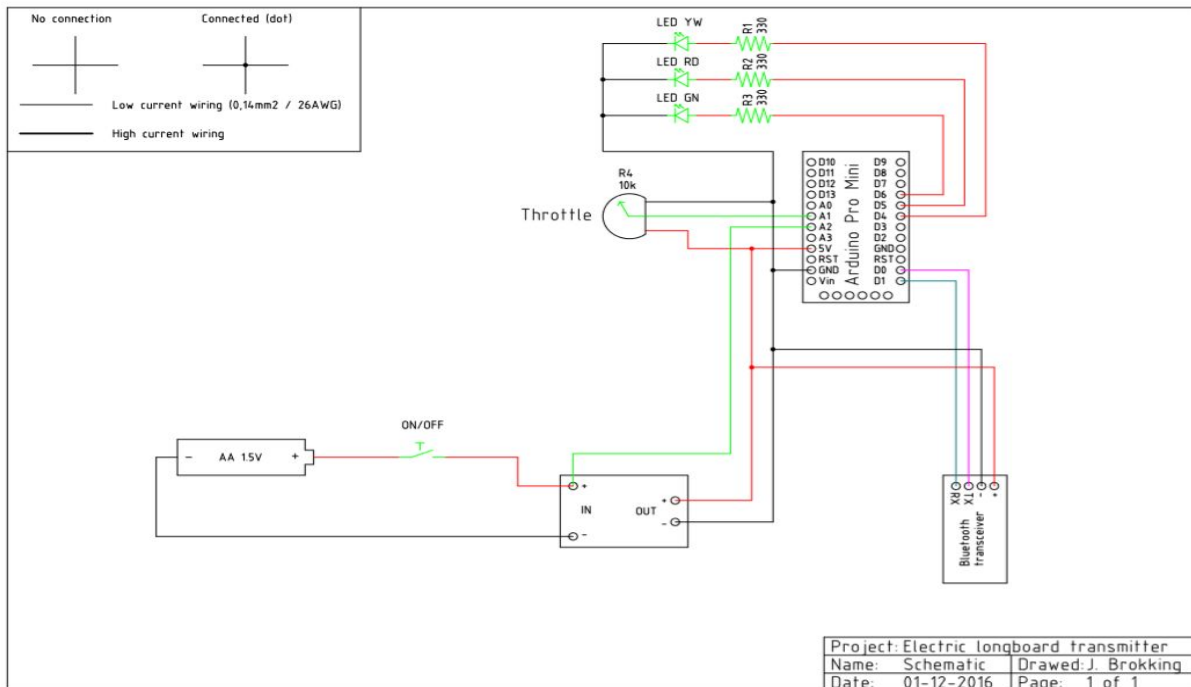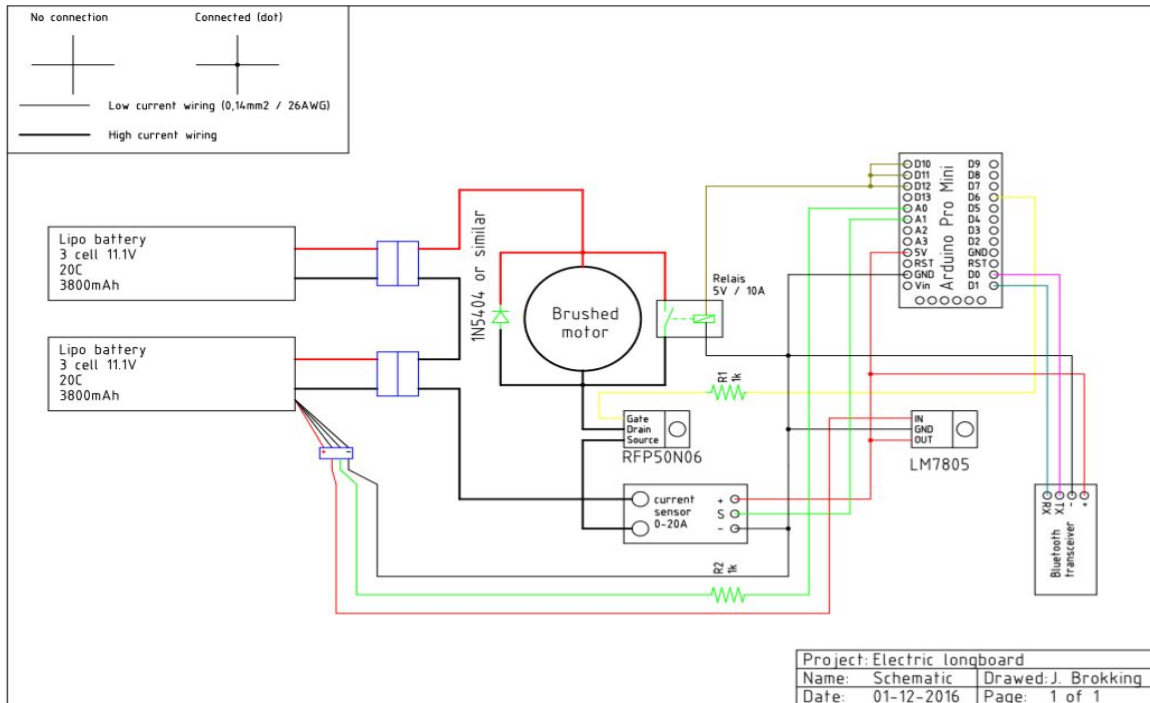**Step Down Voltage** : Driving voltage to the board
Step Up Voltage: Driving Voltage to ESC.
Enclosure: can be 3d printed and Also special paint to waterproof the component.

A little bit for schematic Transmitter and Receiver of **J.Brooking**
(http://www.brokking.net/longboard_main.html) he also worked on this project. But we can design our own and even better

Top schematic:

No connection   Connected (dot)

Low current wiring (0,14mm2 / 26AWG)

High current wiring

Lipo battery
3 cell 11.1V
20C
3800mAh

Lipo battery
3 cell 11.1V
20C
3800mAh

1N5404 or similar

Brushed motor

Relais
5V / 10A

Gate
Drain
Source

RFP50N06

current sensor
0-20A

+
S
-

R1
1k

R2
1k

IN
GND
OUT

LM7805

D10 D9
D11 D8
D12 D7
D13 D6
A0   D5
A1   D4
A2   D3
A3   D2
5V   GND
RST RST
GND D0
Vin D1

Arduino Pro Mini

Bluetooth transceiver
RX
TX
+
-

Project: Electric longboard
Name: Schematic   Drawed: J. Brokking
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Bottom schematic:

No connection   Connected (dot)

Low current wiring (0,14mm2 / 26AWG)

High current wiring

LED YW   R1 330
LED RD   R2 330
LED GN   R3 330

R4
10k

Throttle

D10 D9
D11 D8
D12 D7
D13 D6
A0   D5
A1   D4
A2   D3
A3   D2
5V   GND
RST RST
GND D0
Vin D1

Arduino Pro Mini

ON/OFF

AA 1.5V

IN   OUT
+   +
-      -

Bluetooth transceiver
RX
TX
+
-

Project: Electric longboard transmitter
Name: Schematic   Drawed: J. Brokking
Date: 01-12-2016   Page: 1 of 1

https://www.instructables.com/id/Torque-the-DIY-All-Terrain-Electric-Cruizer-Board/
https://www.instructables.com/id/DIY-Electric-Skateboard-1/
http://www.brokking.net/longboard_main.html