



## ZeroBot - "Off-Road" Version -- Raspberry Pi Zero FPV Robot



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### Summary

This is a remix of Max Kern's great ZeroBot robot (more on [Hackaday.io](#)), with the following changes: Headlights...

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Tags: [camera](#) [motor](#) [robot](#) [battery](#) [robotics](#) [raspberrypi](#) [headlight](#) [freecad](#) [rasberrypizero](#) [thingiverse](#) [rasberrypicamera](#) [rasberrypizerow](#)

This is a remix of Max Kern's great [ZeroBot](#) robot (more on [Hackaday.io](#)), with the following changes:

- Headlights
- Grooved tires
- Charging port
- Front panel holder.

Also, thank you Kelly Jordan for the inspiration with your [aggressive tank tread](#).

Some extra parts are needed:

- 2 BC337 transistors
- 2 1.5K resistors
- 2 22Ω resistor (You may need to adjust this resistor's value, to provide enough current to drive your LEDs)
- 2 cheap flashlights ([like this one](#)), to source the LED and lens.
- 1 Kcd11-101 switch ([easy to find](#))
- 4 M3 x 12mm bolts
- 4 M3 nuts

## Update

Created a shrunk down raspbian image, ready to use, that may fit even a 2GB sdcard. (ZeroBotOffroad.zip)

This image uses Max.K's latest Zerobot Pro control interface changes. To use it, just connect to the "zerobot" WiFi network using the password "zerobot1" then browse to this address: <http://zerobot/> or <http://10.0.0.1/>

## Print Settings

**Rafts:** Doesn't Matter

**Supports:** Yes

**Resolution:** 0.2mm

### Notes:

First read the directions on [ZeroBot](#)'s page.

I'm using Slic3r (Prusa Edition) with this settings:

- Perimeters: 3
- Solid Layers: 3
- Infill: 20%
- Overhang Threshold: 160

If you need, use the extra brim files with the upper or lower shell for easier print (Slic3r):

- Add the upper or lower shell
- Click Settings -> Load Part, and select the corresponding brim file.
- Click OK

## Post-Printing

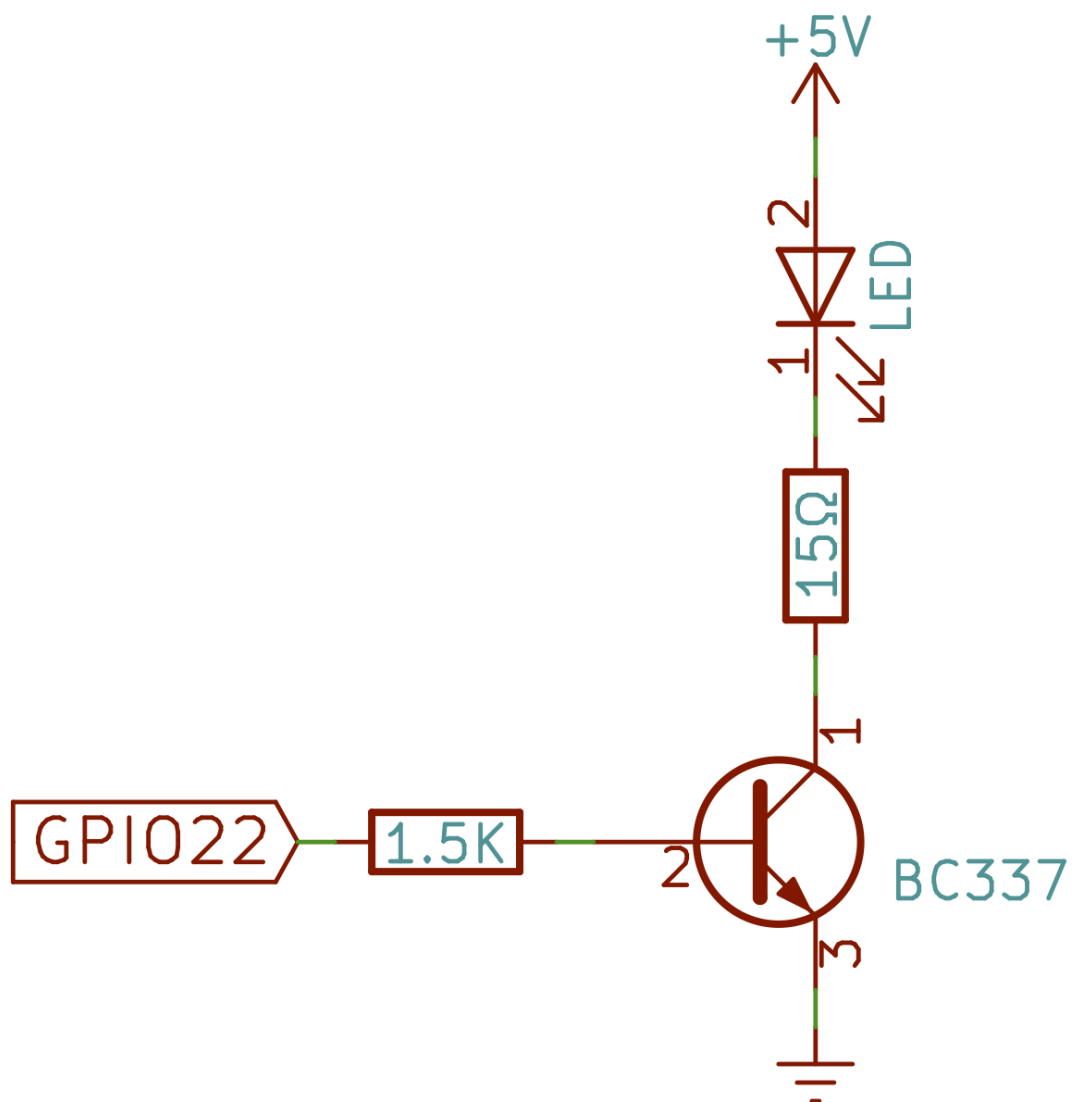
First look at ZeroBot's [Hackaday.io](https://hackaday.io) page, for the basic parts and instructions.

### Headlight assembly

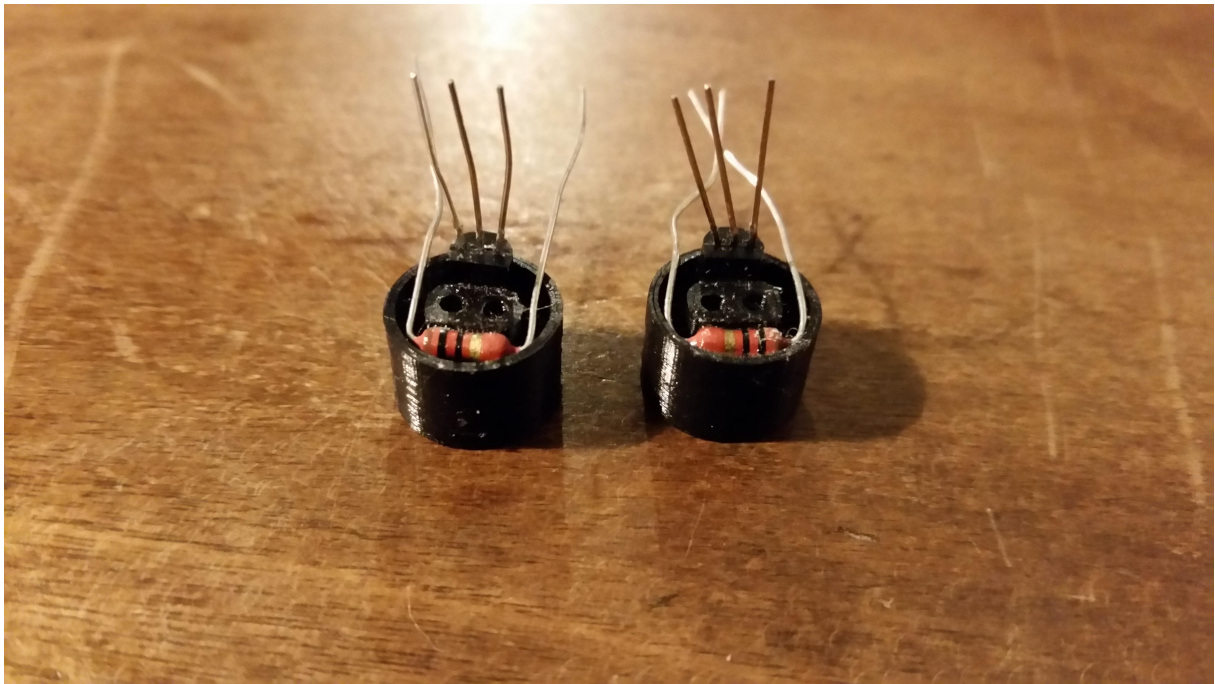
For this you need to retrieve the LED and lens from the flashlights.

You can adapt the headlight part to work with other flashlight sizes by altering some variables in the "CustomizationTable" spreadsheet inside the FreeCAD source file.

It's not possible to drive this LEDs directly from the raspberry pi GPIO ports, so you need to assemble this simple circuit:



Start by gluing the 22 $\Omega$  resistor and the transistor to the headlight part, then solder dead bug style like this:

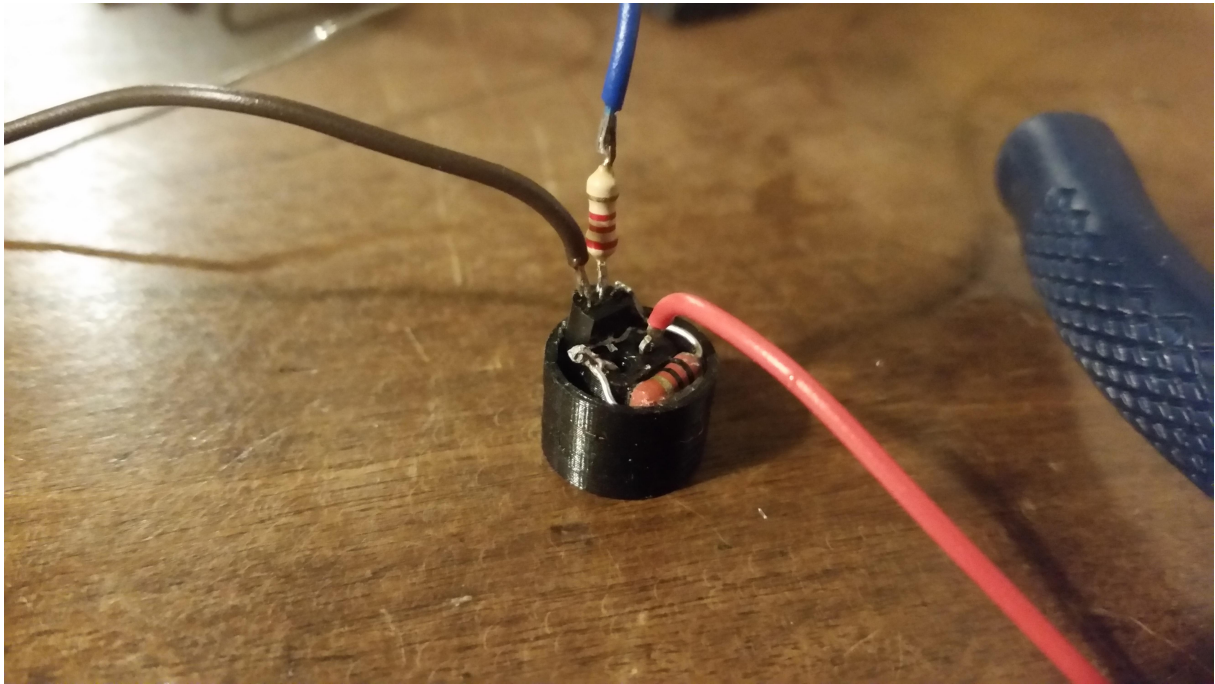


**22 $\Omega$  resistor and transistor glued to the headlight part.**



**LED inserted and soldered (check LED orientation)**





**1.5K resistor and cables soldered red=5v brown=GND blue=GPIO**



**Finish with heat-shrink tubing and some more glue**

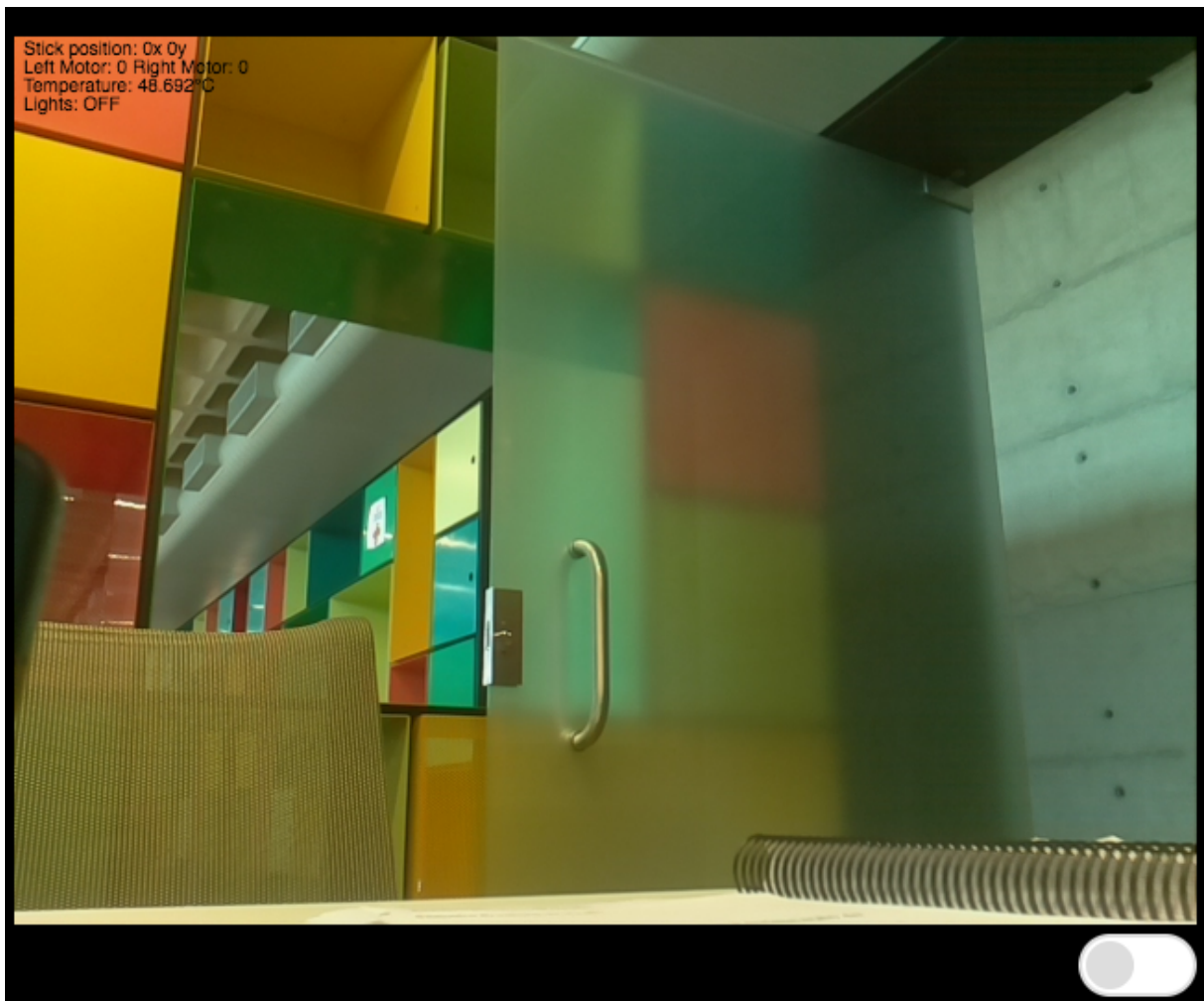
### **Software changes**

Replace the original app.js and Touch.html (~/Desktop/touchUI) with the files in touchUI.zip.

Optional: add the following line to /boot/config.txt to disable the camera LED.

`disable_camera_led=1`

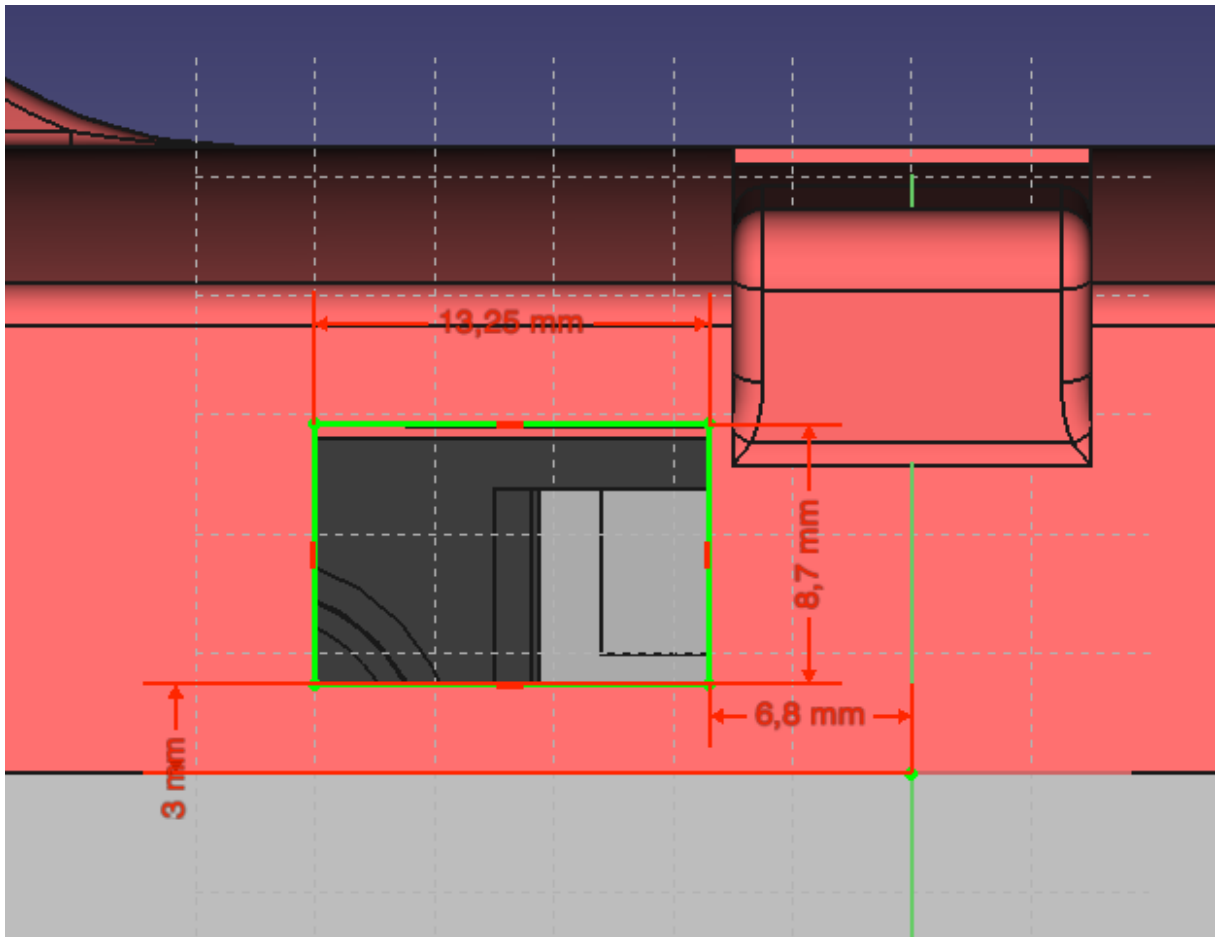
Now you can turn the lights on and off by pressing the switch on the lower right corner:



### **On/Off Switch**

Just plug the switch, no glue needed.

Depending on your printer tolerances, you may need to adjust the hole size. You can do this by altering the "ON/OFF Switch Hole - Sketch" on the FreeCAD source file:



Category: Robotics

## This remix is based on



**ZeroBot - Raspberry Pi Zero FPV Robot**

by MaxK

Thingiverse

- Digital  
Designs  
for  
Physical  
Objects

**Thingiverse - Digital Designs for Physical Objects**

# Model files



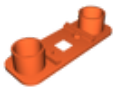
**leftgroovedtire.stl**

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**rightgroovedtire.stl**

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**headlightpanel-125mm.stl**

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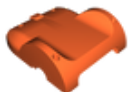
**uppershell.stl**

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**camerapanel.stl**

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**lowershell.stl**

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**wheel.stl**

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**tire.stl**

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**uppershellbrim.stl**

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**lowershellbrim.stl**



**headlight-125mm.stl**



**zerobot.fcstd**

## Other files



**zerobotoffroad.zip**

☐ Raspberry PI sdcard image

[Find source .stl files on Thingiverse.com](#)

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