



# Otto Ninja Starter robot

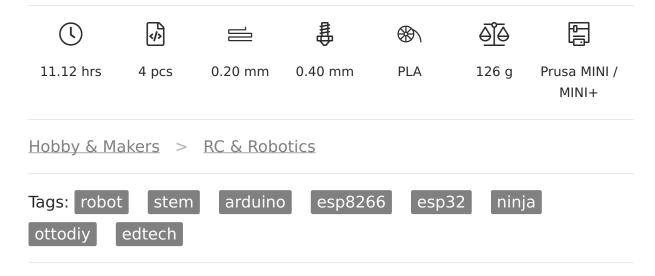
Otto DIY

**VIEW IN BROWSER** 

updated 2. 4. 2024 | published 2. 4. 2024

## **Summary**

Unique open source robot that walks and transforms into a wheeled racer! made by Sebastian Coddington.



## Build your own robot like a Ninja 🗟

This is the first emotional modular EdTech Arduino opensource robot that can walks & rolls!

#### **Features**

- Walk & dance
- Transforms quickly into a wheeled robot
- Simple Programming with Otto Blockly or Arduino

- Expand to Humanoid here: Otto Ninja Humanoid 3D files
- Avoid obstacles with ultrasonic sensor
- LED matrix or OLED emotional eyes to swap
- Makes emotional sounds and melodies
- Button for interactions
- Wireless communication for remote controlling

#### **List of Parts**

- Otto Ninja PCB ESP8266 (you could use a wemos board with a servo shield)
- Micro USB cable Data Sync
- Battery 6F22 Rechargeable Lithium (9V 650mAh with USB port for charging)
- Toggle switch + UBEC Regulator (OUT 5V/ 3A) + XH 2P connector + 9V Battery connector soldered.
- 2 x Ninja Servo 180° metal gears (it comes with 3 screws)
- 2 x Ninja Servo 360° continuous rotation metal gears (it comes with 3 screws)
- 2 x Oring 68 mm OD 60 mm ID 4 mm
- Ultrasonic sensor HC-SR04
- Button module with headers
- 4pin Dupont cable with connector
- 2 x 3pin Dupont cable with connector
- Buzzer module with headers
- Screwdriver Phillips 2.5x40mm (with magnetic tip)
- 4 x Metal self-tapping screw M2\*5 (they must be ferromagnetic)
- Matrix 16x8 LEDs HT16K33 (OPTIONAL)
- OLED display 1.3" (**OPTIONAL**)
- 3D printed Ankle Left Black
- 3D printed Ankle Right Black
- 3D printed Base Black
- 2 x 3D printed Foot Black
- 3D printed Inner Bottom Black
- 3D printed Legs Black
- 3D printed Starter Lid Black
- 3D printed Plate Matrix Lid Black
- 3D printed Plate Ultrasonic Lid Pink
- 3D printed Band Red

## How to build 3D guide here in this link and watch this video for referenceWhat can Otto Ninja do?

Otto Ninja can walk, transform, roll, show emotions, dance, sense motion & objects

#### Coding from beginner to advanced

Program Otto Ninja to think on its own using block-based coding with Blockly or C++ with Arduino IDE. How to Code guide here in this link

Github repo here OttoDIY/OttoNinja

#### Want to just play?

Via the kit's **wireless communication** module, remote control your Otto Ninja by connecting to your mobile or tablet to race or have fun battles!

#### **Print instructions**

Otto is very well-designed for 3D printing, so won't give you trouble if you follow this common parameters:

Recommended using an FDM 3D printer. No need of supports or rafts. Resolution: 0.2 mm or less Fill density 15%

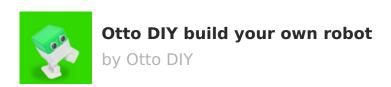
Alternatively you can try to build the previous design that uses more common off the shelf parts Otto Ninja robot Arduino Nano design by Otto DIY | Download free STL model | Printables.com

We invested lots of time and resources to provide open source code, software and hardware, please support this project by just **giving us a ♥ Like,** and **share** 

You are **welcome to be a part of this friendly community** of robot builders, teachers and makers.

Join today our Otto Builder community

## This remix is based on





**Otto DIY Wheels robot** 

by Otto DIY



**Otto DIY Smart OLED robot** 

by Otto DIY



Otto DIY Emotional LED eyes robot

by Otto DIY



## Otto Ninja robot Arduino Nano design

by Otto DIY

## **Model files**



otto-diy\_ninja\_lid.stl



otto-diy\_ninja\_innerplate.stl



otto-diy\_ninja\_head.stl



otto-diy\_ninja\_legs.stl







otto-diy\_ninja\_leg-left.stl



otto-diy\_ninja\_footwheels-x2.stl





otto-diy\_ninja\_plate-ultrasonic.stl



otto-diy\_ninja\_plate-matrix.stl



otto-diy\_ninja\_plate-oled.stl

□ OPTIONAL



otto-diy\_ninja\_band.stl

print in red :D

otto-ninja-2021-2-v14.step

☐ CAD file

## **Print files**



 $otto-diy\_ninja\_mainbodyparts\_02mm\_pla\_mini\_8h46.gcode$ 

♠ PLA ♣ 0.40 mm = 0.20 mm ③ 8.76 hrs 
♠ 96 g 
☐ Prusa MINI / MINI+

☐ Main Body parts in black

### $otto\text{-}diy\_ninja\_foot\text{-}x2\_02mm\_pla\_mini\_1h12m.gcode$



☐ Feet/ Wheels in black



#### otto-diy\_ninja\_plates\_02mm\_pla\_mini\_41m.gcode





☐ Ninja band in red

Find source .stl files on Thingiverse.com

## License @

This work is licensed under a Creative Commons (4.0 International License)



#### **Attribution-ShareAlike**

- ★ | Sharing without ATTRIBUTION
- ✓ | Remix Culture allowed
- ✓ | Commercial Use
- ✓ | Free Cultural Works
- ✓ | Meets Open Definition