

OpenCat Nybble DIY



hackoholic

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Summary

Update 1/4/2020: Added a new STL option for the eyes that should fit a SR04 sensor. Update 12/5/2019: After last...

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Tags: [robot](#) [robotics](#) [nybble](#) [opencat](#) [petoi](#)

Update 1/4/2020:

Added a new STL option for the eyes that should fit a SR04 sensor.

Update 12/5/2019:

After last night's down time for maintenance, the upload function seems to be working again. I have re-uploaded all 25 files and they appear to be downloading properly again. Please use the regular download function and let me know if any issues crop up.

Update 12/4/2019:

Thingiverse is acting up and will not let me upload the files properly because their site is broken and buggy and probably completely overwhelmed. Please check comments from today's date for a temporary link to the files stored in OneDrive.

This is my Do It Yourself version of the OpenCat Nybble robotic kitten by Petoï (as seen on the cover of Make Magazine, Volume 70 Oct/Nov 2019). You can support the project on the Indiegogo site (<https://>

www.indiegogo.com/projects/nybble-world-s-cutest-open-source-robotic-kitten#/) where you can buy a full kit or even just the electronics board.

Source code and schematic is located at <https://github.com/PetoiCamp/OpenCat>

Using only the Magazine article as reference, I have designed my own, duplicate, 3D Printable frame so that you can print your own or even use my design as spare parts to repair your official lasercut kit.

Electronics required are as follows:

Arduino Pro Mini 5V 16Mhz

EEPROM 24LC256

MPU-6050 Gyro

Piezo buzzer

1500UF 16V High Temperature Aluminum Electrolytic Capacitor
<https://www.microcenter.com/product/429755/nte-electronics-vht1500m16-1500uf-16v-high-temperature-aluminum-electrolytic-capacitor>

Adafruit 16-Channel 12-bit PWM/Servo Driver - I2C interface - PCA9685
<https://www.adafruit.com/product/815>

QTY (11) MG90S Metal Gear Servos
https://www.amazon.com/gp/product/B07R7PYK9T/ref=ppx_yo_dt_b_asin_title_o07_s00?ie=UTF8&psc=1

38 KHz IR Receiver
<https://www.microcenter.com/product/476345/velleman-1838-ir-infrared-379khz-receiver---2-pack>

Compatible IR Remote (I chose this 44 button remote from [Amazon](#) and modified the Arduino Code to match)
https://www.amazon.com/gp/product/B00AF5YOK2/ref=ppx_yo_dt_b_asin_title_o03_s00?ie=UTF8&psc=1

Ultrasonic Range Finder for Eyes (SRF05)
<https://www.amazon.com/s?k=srf05&hvadid=77927986214133&hvbmt=be&hvdev=c&hvqmt=e&tag=mh0b-20&>

Print Settings

Printer Brand:

Prusa

Printer:

i3 MK2S

Resolution:

.2

Infill:

20%

Filament: Hatchbox PLA Black

Notes:

Most parts are simply flat patterns which are really quick and easy to print. The original leg sections (I called them "Thighs") were a 2-piece sandwich design that bolted together and needed store bought metal springs. My design is a 1-piece "print-in-place" design that includes 3D printed springs.

Note: I had to use considerable force to break loose the embedded sliding pieces so don't assume yours are fused together just because it takes some force to break loose! Use the included 3D printed springs to save having to buy metal ones at a store. Also note it took some fiddling in Slic3r PE to get the springs to print at a 0.4mm wide, single extrusion width. I found them to be too stiff if printed any thicker than one extrusion width.

Very little hardware is required to assemble and all hardware needed is included with your servos!

Post-Printing

DIY Electronics soldered to a std 50mmx70mm project board

Back side showing 16 CH PWM board, right angle headers and JST connector for 2s RC battery

Custom IR Remote button mapping

As discussed on Petoï user forum

<https://www.petoï.com/forum/software/altering-code-for-alternate-ir-remote>

Note:

Link appears to not resolve but that is because you must register or sign up on the Petoï forum. Took me a few days myself to realize this. No fees, not personal data, just an e-mail address to sign up so don't worry.

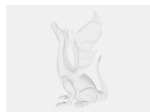
This is the schematic I used from a previous version of the OpenCat project.

How I Designed This

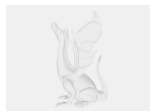
Fusion 360

Category: Robotics

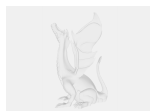
Model files



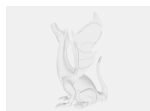
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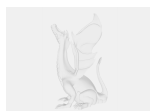
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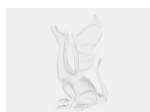
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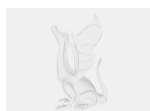
large_display_controller_mount_112910.stl



large_display_ears_mg90s_112910.stl



large_display_ears_112910.stl



large_display_eyes_srf05_112910.stl



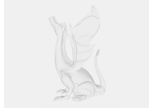
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large_display_neck_lock_112910.stl



large_display_thigh_112910.stl



large_display_tail_112910.stl



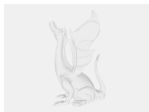
large_display_whiskers_112910.stl



large_display_skull_112910.stl



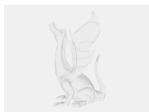
large_display_spring_40_4_112910.stl



large_display_forearm_112910.stl



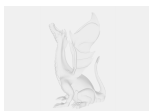
large_display_eyes_112910.stl



large_display_neck_base_plate_112910.stl



large_display_thigh_test_49mm_112910.stl



large_display_thigh_test_47mm_112910.stl



large_display_eyes_sr04_112910.stl



eyes_sr04.stl



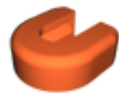
chin.stl



forearm.stl



shoulder.stl



thigh_test_49mm.stl



ears_mg90s.stl



eyes.stl



neck_base_plate_mg90s.stl



ears.stl



thigh.stl



chin_mg90s.stl



controller_mount_mg90s.stl



tail.stl



chest_hips_mg90s.stl



spine.stl



bellyplate_mg90s.stl



neck_base_plate.stl



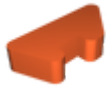
neck_side_plate.stl



thigh_test_47mm.stl



controller_mount.stl



neck_lock.stl



bellyplate.stl



tail_wheel.stl



spring_40_4.stl



whiskers.stl



head_spring_30_4.stl



skull.stl



eyes_srf05.stl



chest_hips.stl

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