

OPEN SOURCE ROBOTS: TO MAKE, OR NOT TO MAKE?

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Inria and ENS-PSL



OPEN SOURCE

OPEN SOURCE ROBOTS

SHARING THE TOOLS

TO MAKE, OR NOT TO MAKE?

Why?

follow-up to Ludovic's question







DuckDuckGo

Search the web without being tracked



What Technology Wants

What Technology Wants is a 2010 nonfiction book by Kevin Kelly focused on technology as an extension of life. [Wikipedia](#)



Author: Kevin Kelly

Subjects: Culture, Human, Life, Technology

Publisher: Viking Press

OPEN SOURCE

Case 1: my code is in a public repository.

Is it open source?

Case 2: my code is on a USB stick I gave to a friend.

Is it open source?

Case 3: my code is in a public repository, with the GPLv3 license.

Is it open source?

Case 4: my code is in a public repository, with the CC-BY-NC license.

Is it open source?

My code is ... Is it open source?

1. **Public:** maybe not
2. **USB stick:** maybe
3. **Public, GPLv3:** yes
4. **Public, CC-BY-NC:** no

The goal of open source is to foster *conditions for collaboration*.

The Open Source Definition (1998):

- **Free redistribution (1):** no royalty, software can be sold, ...
- **Source code (2–4):** is included, can be modified, ...
- **No discrimination (5–10):** against persons, fields, joint software, ...

(Says nothing about the capacity of users to run the software.)

Define “open source” for robots:

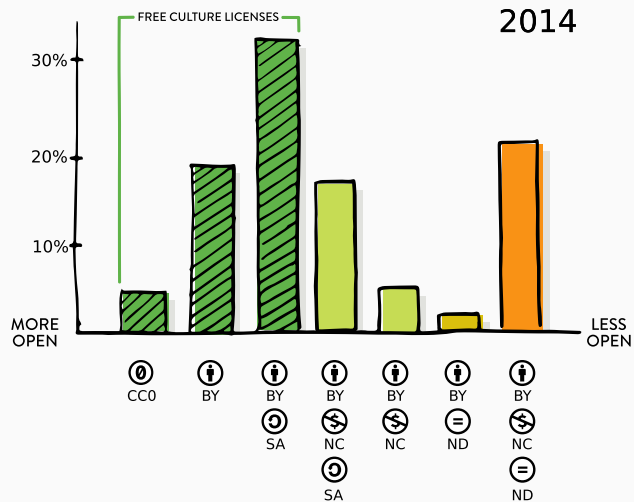
1. **Software:** open source license (copyleft or permissive)
2. **Mechanics:** which license?
3. **Electronics:**¹ which license?

Copyleft? Permissive? Creative Commons?

OSHWA?²

¹Thanks to Olivier Stasse for pointing this out (this is incomplete in what follows!)

²Thanks to Thomas Flayols for pointing this out.



License: [Free-cultural-license-cc.svg](#), Wikimedia Commons (CC-BY-4.0)

OPEN SOURCE ROBOTS

☰ README.md 

Awesome Open Source Robots

A curated list of awesome robots that are fully open source, both hardware and software.

Contents

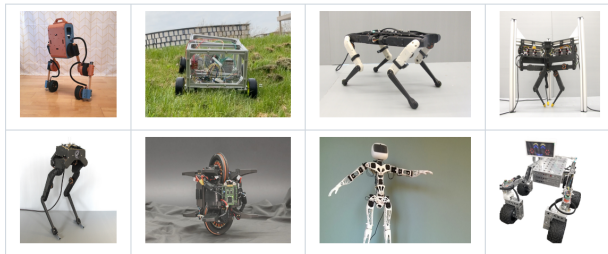
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Robots

Bipeds

Name	Type	License	Build	Software
Bolt	Point-foot	CC0-1.0	Instructions	GitHub
Kayra	Flat-foot	BSD-3-Clause	Instructions	GitHub
Upkie	Wheeled	Apache-2.0	GitHub	GitHub

Gallery

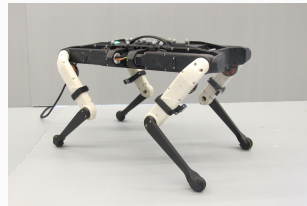


Add a Robot to the List

New robots are welcome to the list, as long as they are [open source](#) in both hardware and software.

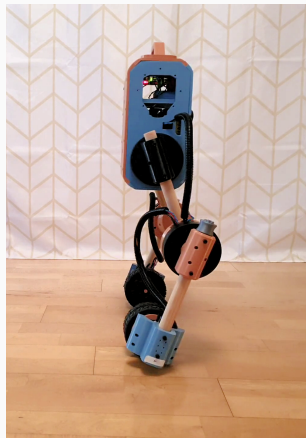
<https://github.com/tasts-robots/awesome-open-source-robots>

- **Software:**
 - Released: ✓
 - License: BSD-3-Clause
- **Mechanics:**
 - Released: ✓
 - License: BSD-3-Clause
- **Electronics:**
 - PCB: ✓
 - Firmware: ✓
 - License: BSD-3-Clause
- **Build instructions:** ✓



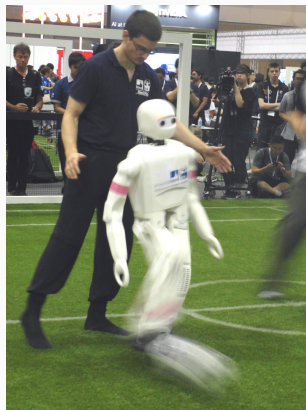
<https://open-dynamic-robot-initiative.github.io/>

- **Software:**
 - Released: ✓
 - License: Apache-2.0
- **Mechanics:**
 - Released: ✓
 - License: Apache-2.0
- **Electronics:** (from mjbots)
 - PCB: ✓
 - Firmware: ✓
 - License: Apache-2.0
- **Build instructions:** ✓



<https://github.com/tasts-robots/upkie>

- **Software:**
 - Released: ✓
 - License: BSD-3-Clause
- **Mechanics:**
 - Released: ✓
 - License: CC-BY-NC-SA-3.0*
 - * not open source
- **Electronics: ?**
- **Build instructions: ✗**



<https://www.nimbro.net/OP/>

Works in progress that may become open source (nudge nudge!):

	License	Released	Instructions	At JNRH?
Borinot	not yet	not yet	not yet	Fri 15:30–15:45
Rhea	?	partially	-	-
Sassa	✓	not yet	not yet	Fri 10:30–11:30

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Author: Kevin Kelly

Subjects: Culture, Human, Life, Technology

Publisher: Viking Press



Tools

- **Software:**
 - Released: ✓
 - License: Apache-2.0
- **Mechanics:**
 - Released: ✓
 - License: Apache-2.0
- **Electronics:**
 - PCB: ✓
 - Firmware: ✓
 - License: Apache-2.0
- **Support:** empirically \approx 24/7 on Discord



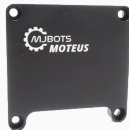
<https://mjbots.com/>



moteus r4.31 controller
\$104.00 USD



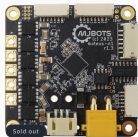
moteus r4.11 developer kit
\$224.00 USD



moteus r4 heat spreader
\$29.00 USD



god100 beta 3 servo
\$539.00 USD



moteus n1
\$159.00 USD



god100 beta 3 developer kit
\$659.00 USD



moteus n1 developer kit
\$279.00 USD



moteus n1 heat spreader
\$29.00 USD

<https://mjbots.com/>

TO MAKE, OR NOT TO MAKE?

“Seul, on va plus vite. Ensemble, on va plus loin.”

