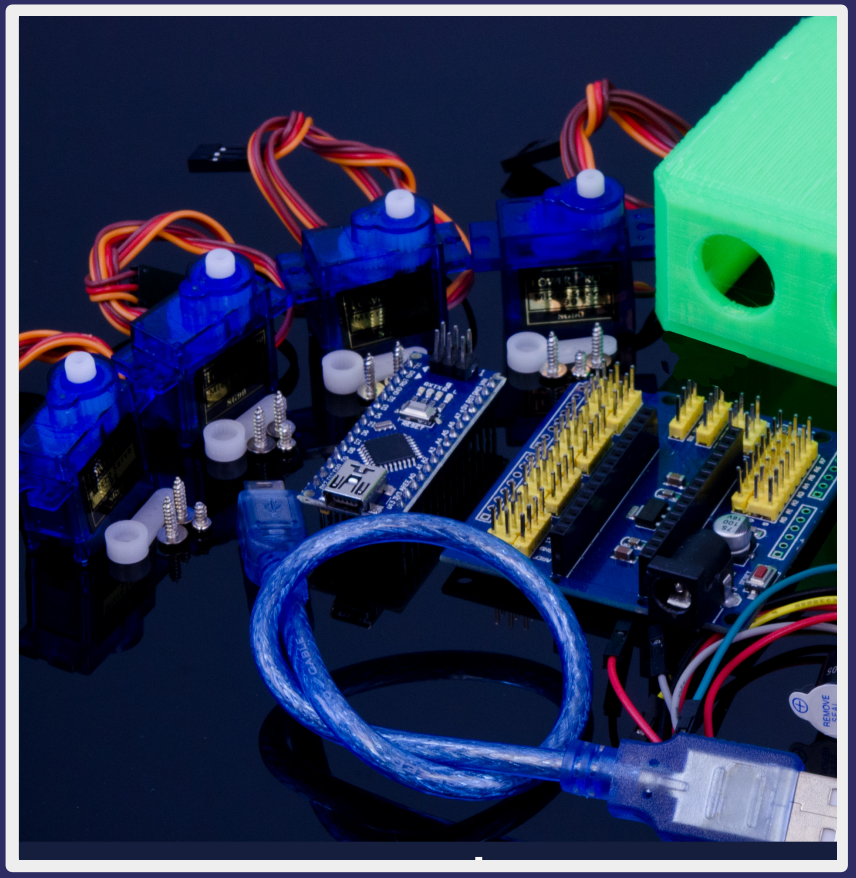
Otto DIY workshop

1) general objectives.
2) pedagogical objectives.
3) what do I need to define?
4) list of activities.
5) definition of activities.
6) recommendations.
7) basic use of Otto .
8) FAQ (frequently asked questions)

general objectives

- increase curiosity about, electronics and products.
- arouse interest in Otto and its entertainment possibilities.
- acquire transverse learning, such as environmental education or discovery of the world through Otto.



pedagogical objectives

- discover Otto's possibilities.
- use educational technology.
- learn programming with blocks
- improve sequential thinking.
- brainstorm of improving Otto by adding more components.
- customize your Otto.

what do we need to define?

objectives

costs

participants

robot kits / materials

location

date

age group / level

teachers

content

logistic

rest and catering

pedagogy

time for preparation

duration

list of activities	duration
intro to the workshop	5 minutes
what is a robot?	10 minutes
parts of a robot	10 minutes
basic concepts	15 minutes
build your own robot	60 minutes
code your own robot	15 minutes
troubleshooting & debugging	5 minutes

definition of activities

- open question: what is a robot?
- explain what a robot really is.
- what objects or toys they know are electronic products?
- conclusion of what we have learned about robots.
- have we changed our point of view?

what is a robot?

assistant

space rover

toy

humanoid

car

arm

cleaner

plane

truck

pet

machine

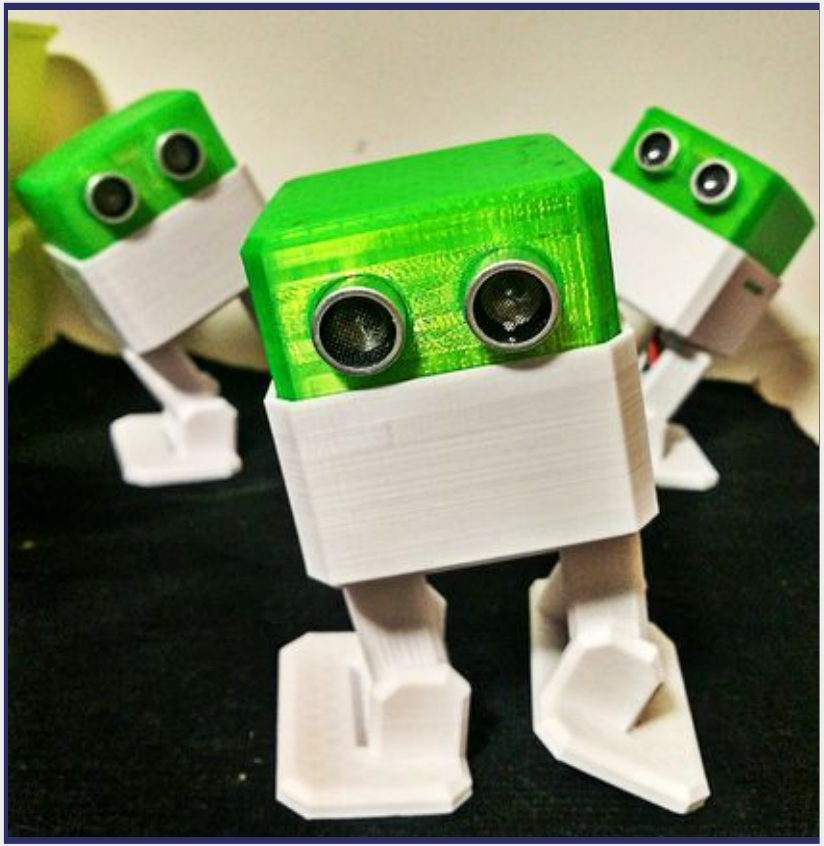
Otto

drone

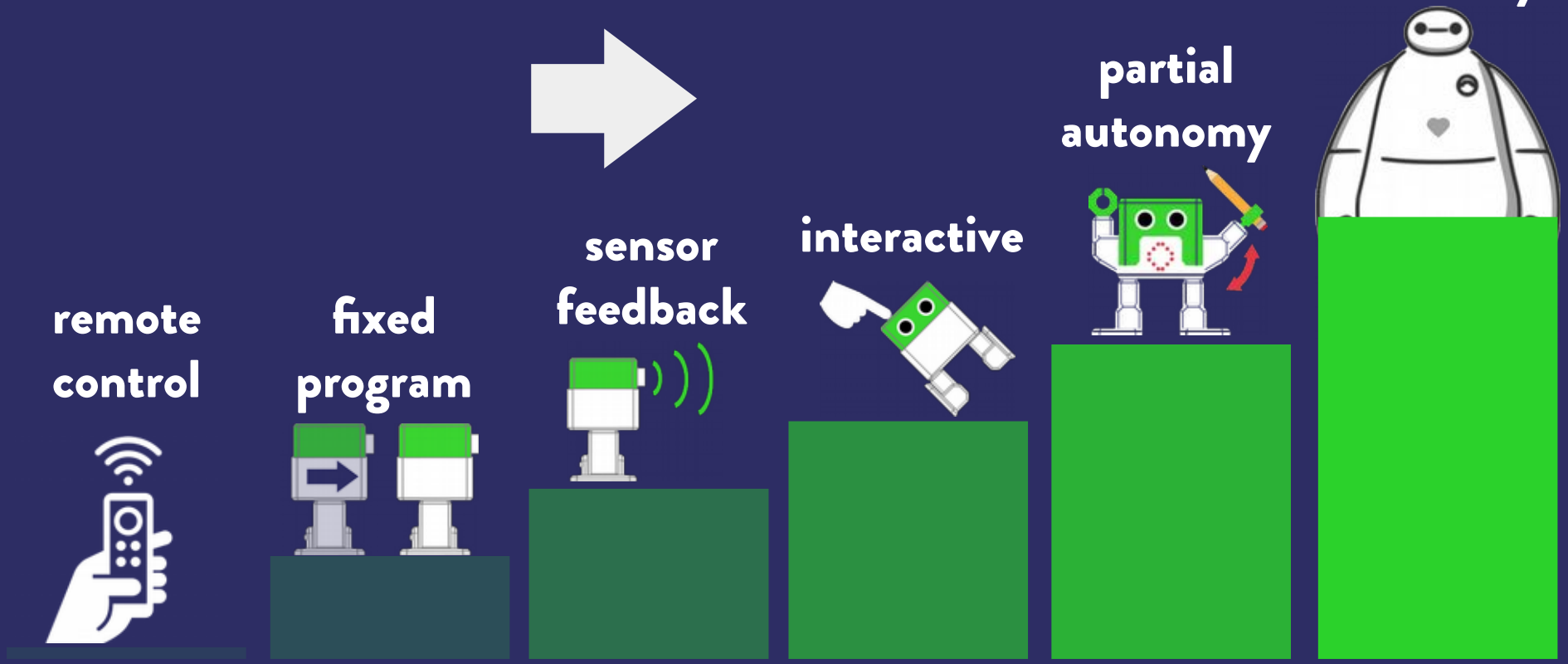
Czech word, robota, meaning “forced labor”

a robot...
the word robot many times when we hear it, we imagine a human shaped machine that walks, talk, make gestures ... but it's really something much simpler.

a robot is an automatic machine programmable that is able to interpret physical media information to modify its behavior. It has the ability to interact with the environment and, depending on that, perform some functions or others.



Level of robot autonomy (LORA)



from the 3rd level (sensor feedback) we could be really talking about a robot, although not all the world agrees... it's not very well defined when a machine is or ceases to be Robot.

we could define robot as a machine that interacts with the environment and also helps to be human in tedious or dangerous work or in Otto´s case, on his mission of teach technology and having fun.

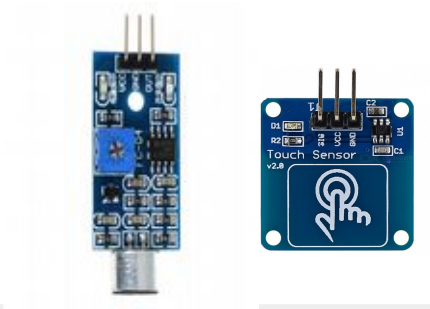
parts of a robot

- we learn to differentiate between sensors and actuators.
(inputs vs outputs)
- where is the brain of the robot?
- what is a servomotor?
- can Otto talk?
- how does Otto see?
- other components & interactions.

buy in: ottodiy.com

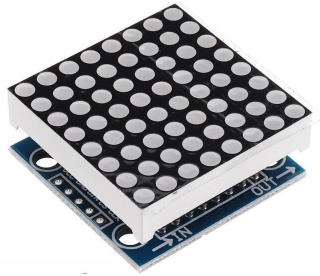
every robot has basically 3 component groups:

sensors (INPUTS)
able to interpret information.



processor system
a "mini computer"

actuators (OUTPUTS)
produce the effect programmed.



build your own robot

time to build your Otto! make sure to follow the right instruction manual according to your kit.

Basic Kit

instruction manual

Kit E

instruction manual

Kit +

instruction manual

Kit H

instruction manual

visit: ottodiy.com

precautions

- cable colors in the kit may vary, but you just have to connect to between the right pins.
- always double check, inverted polarity (short-circuit) can damage components.

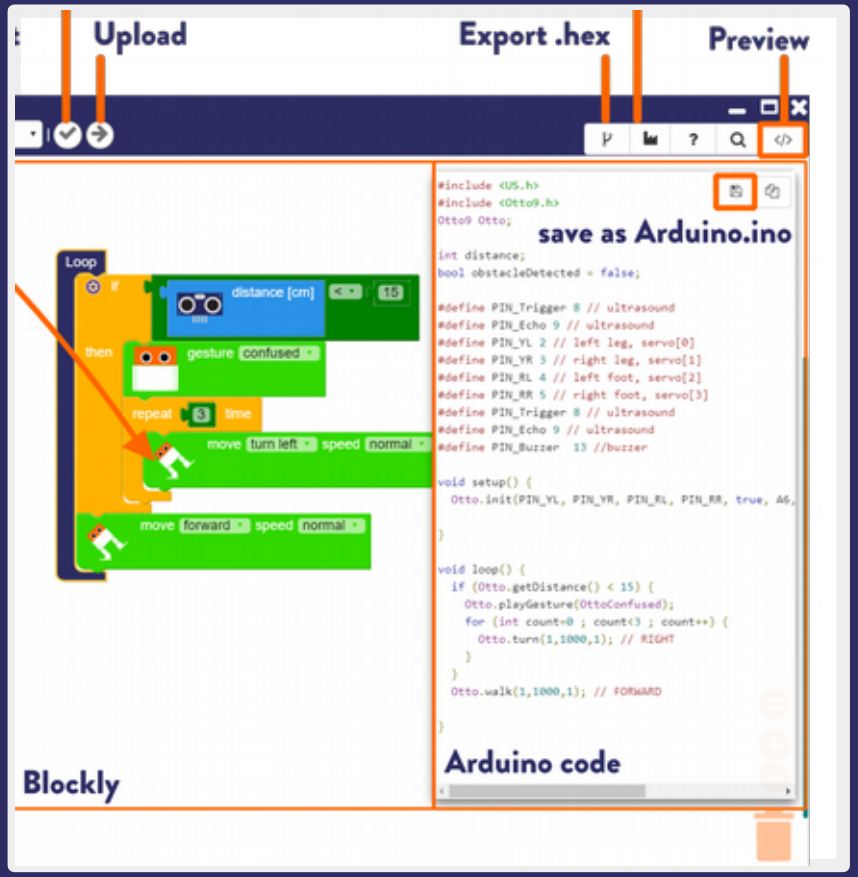
- always test and power with USB cable first before using any kind of batteries.

- be gentle with the servomotors.

- 3D printed parts might need to clean them a bit specially in the screw holes.

code your own robot

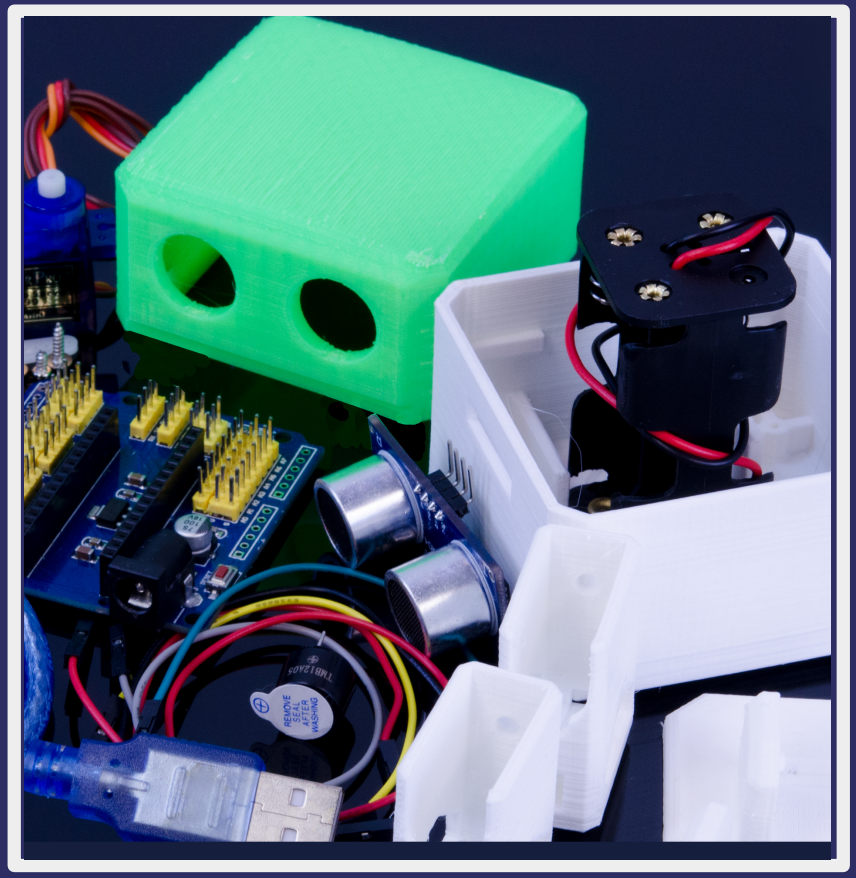
- familiarize with the block programming environment.
- first a simple project, programming a dance with Otto.
- learn the concept of sequential thinking.
- make a complicated project, Otto must carry out a determined action.



install the software with the examples in: https://www.ottodiy.com/#blockly

recommendations

- check that all the robots have new or fully charged batteries.
- all the documentation prepared.
- all the tools prepared.
- good sound conditions.
- enough table space to handle the materials.
- preparation time for materials in space.
- have spare batteries, USB cables and parts.
- adapt to unexpected changes in the number of children or other factors.
- assistant answering questions.



troubleshooting & debugging

find and fix, perseverance is important.

not finding Otto connected in your PC?
install the CH340 driver to recognize USB device.

can not upload code?
check USB cable and that Bluetooth is disconnected

does Otto reset every now and then?
that is because of lack of power, discharged batteries.

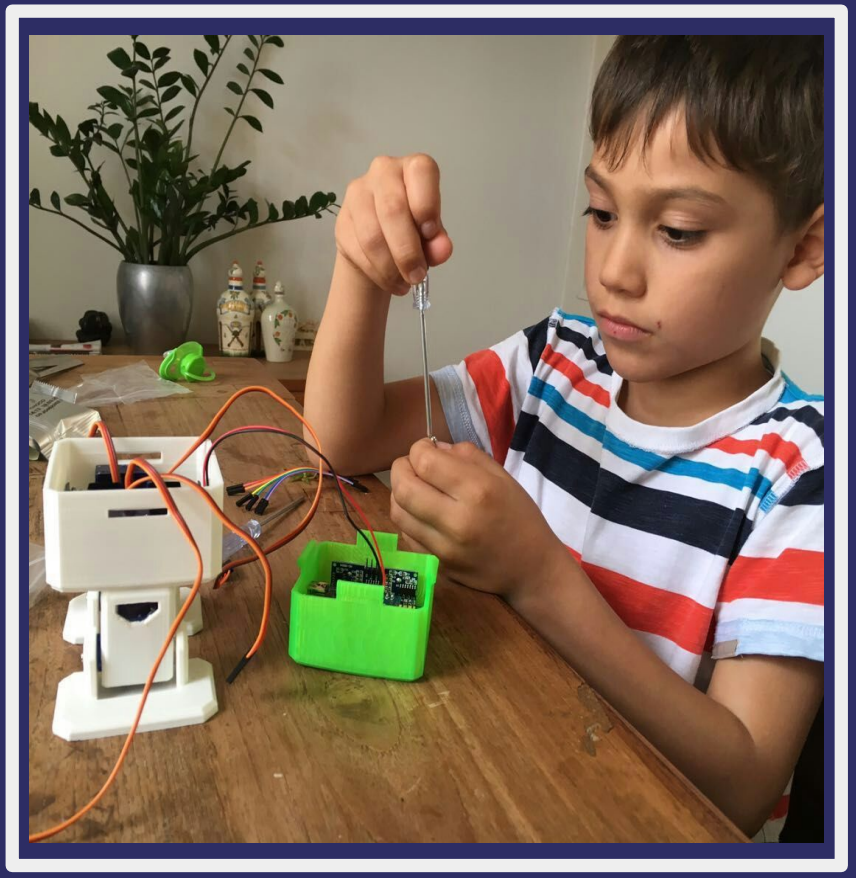
are Otto legs and feet twisted?
check that you centered your servos before assembly for precise movements calibration is needed read this blog article: https://www.ottodiy.com/blog/calibration

ask for help in the community forum : https://wikifactory.com/+OttoDIY/forum

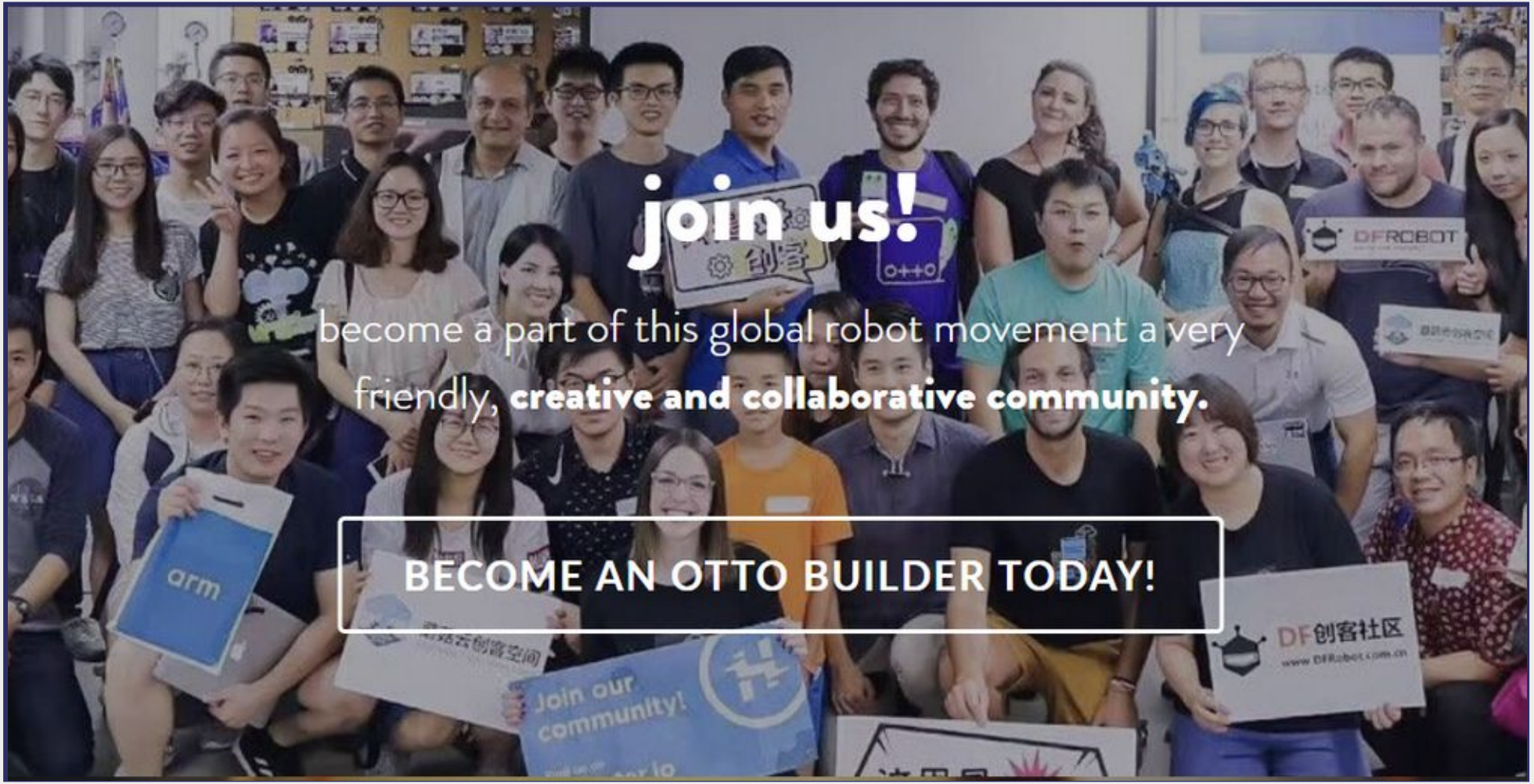
FAQ (frequently asked questions)

is it hard to build?
NO, thanks to the accompanying instructions and how to videos, Otto is simple to build.

how long is the battery?
4AA batteries lasts approximately 2 hours, but it depends on Otto's use and quality of battery.



join here: https://www.ottodiy.com/blog/clubs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become a part of this global robot movement a very friendly, creative and collaborative community.
BECOME AN OTTO BUILDER TODAY!
arm
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additional STEAM education lessons:

1. build your own robot	(introduction)
2. code your own robot	(blocks programming basics)
3. learn to code	(advanced blocks, conditionals and compare Arduino)
4. learn to really code	(Arduino basics, C/C++, inputs, outputs)
5. create your own dance for Otto	(apply all learned)
6. what is inside Otto?	(learn electronics basics and wiring with Fritzing)
7. play with sensors	(experimentation, action - reaction)
8. design your own robot	(paper-craft with Inkscape and TinkerCAD basics)
9. make your own accessories	(basic of 3D printing or other creative decorations)
10. document your new Otto REMIX	(Presentation and showcase!)

reach to us for more content : https://www.ottodiy.com/

thanks!

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