

# Makeblock Neuron Creative Lab 2.0



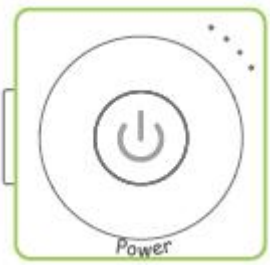




## Neuron Creative Lab Kit 2.0


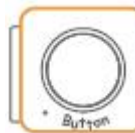




Spark off invention with Neuron e-blocks

Makeblock Neuron Creative Lab kit includes most of the electronic building blocks on Makeblock Neuron platform. With more than 30 electronic building blocks, the Creative Lab Kit brings children even more possibilities in bringing their ideas to life, and gives educators a multitude of ways to integrate practical learning, programming, with their educational practices.













# Update List

Part Name & Picture		1.0	2.0
Power		× 2	× 2
Wi-Fi		× 1	<u>× 0</u>
Bluetooth		× 1	<u>× 2</u>
Wireless Transmitter		× 1	× 1
Wireless Transmitter		× 1	× 1

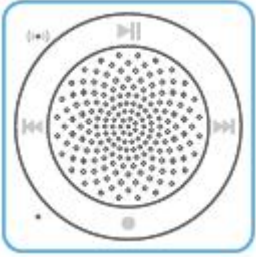
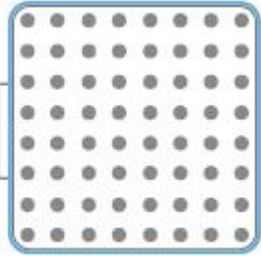
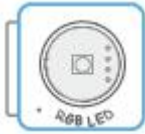
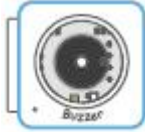
Part Name & Picture		1.0	2.0
Joystick		× 1	× 1
Button		× 1	<u>× 2</u>
Knob		× 1	<u>× 2</u>
Funny Touch		× 1	× 1
Camera		× 1	<u>× 0</u>
Light Sensor		× 1	× 1

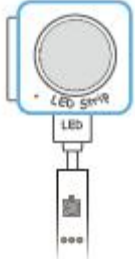
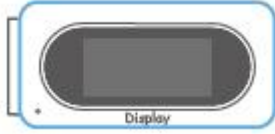

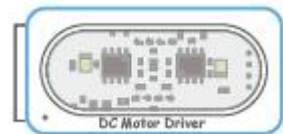
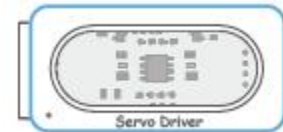
# Update List

Part Name & Picture		1.0	2.0
Color Sensor		× 1	× 1
Gyro Sensor		× 1	× 1
Humiture Sensor		× 1	× 1
Sound Sensor		× 1	× 1
PIR Sensor		× 1	× 1
Ranging Sensor		× 0	<u>× 1</u>

Part Name & Picture		1.0	2.0
Temperature Sensor		× 1	× 1
Soil Moisture Sensor		× 1	× 1
Dual IR Detector		× 1	× 1
Ultrasonic Sensor		× 1	× 1


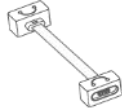
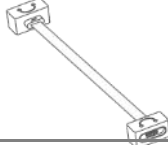
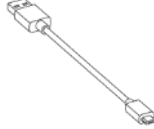



# Update List

Part Name & Picture		1.0	2.0
Mic & Speaker		× 1	<u>× 0</u>
LED Panel		× 2	× 2
RGB light		× 1	× 1
Buzzer		× 1	× 1

Part Name & Picture		1.0	2.0
LED Strip Driver		× 2	× 2
Display		× 1	× 1
EL Wire Driver		× 1	<u>× 0</u>
Dual DC Motor Driver		× 1	<u>× 2</u>
Dual Servo Driver		× 1	<u>× 2</u>

# Update List

Part Name & Picture		1.0	2.0
Laser Pointer		× 1	<del>× 0</del>
Water Pump		× 1	× 1
N20 DC Motor		× 2	<del>× 0</del>
N30 DC Motor		× 0	<u>× 4</u>
Neuron Board		× 9	<u>× 12</u>
Servo Kit		× 2	<u>× 4</u>

Part Name & Picture		1.0	2.0
Friction Pin Connector		× 36	<u>× 72</u>
Magnet Wire (10cm)		× 3	× 3
Magnet Wire (20cm)		× 3	× 3
USB Cable (20cm)		× 2	<del>× 0</del>
USB Cable (100cm)		× 1	<u>× 2</u>
Rubber Band		× 80	<del>× 0</del>
Gel Pad		× 6	× 6

# Creative Lab-key highlights

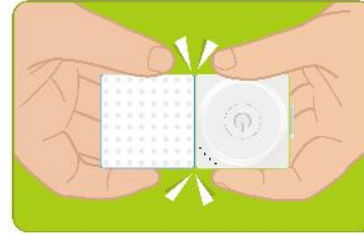
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Includes 30 blocks that can be used to create more than 100 interactive preset effects so that you can easily build your own projects anywhere and any time.



Supports Makeblock Neuron app and mBlock, which are suitable for ages to explore the fun of programming and experience the multidisciplinary fascination.



The patented magnetic connector effectively prevents block from being misconnected, and makes each connection accurate and rapid.



Includes multiple advanced blocks such as Wi-Fi, camera and mic & speaker, which supports IoT, AI, deep learning and more complex functions. Children can learn cutting-edge technology while playing.

# International Awards in Stack

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Neuron wins 7 international awards, including IDEA Gold 2017 (US), 2018 Gold Edison Awards, iF Design Award, CES Innovation Awards 2018(US), Red Dot Award: Product Design 2017(Germany), Good Design Award 2017 (Japan), K-DESIGN GOLD WINNER 2017(Korea).



IDEA Gold



iF Design Award



CES Innovation Awards 2018



reddot design award winner 2017

Reddot Design Award Winner



Good Design



K-DESIGN Gold 2017



# Family

Entertain families and encourage them to create



For children of ages 6+



Family Fun

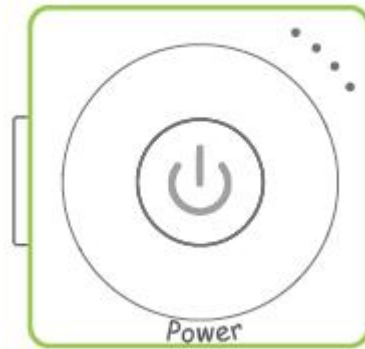
# Educators

Teaching tools for schools and after-school clubs

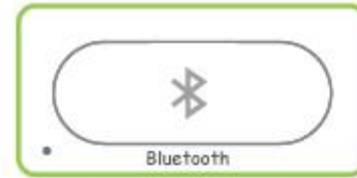


# Neuron Modules

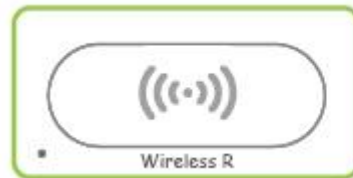
## Power and communications



Power



Bluetooth

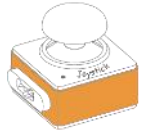


Wireless Receiver

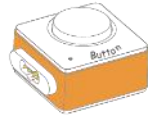


Wireless Transmitter

# Neuron Modules Control



Joystick



Button



Knob



Ranging Sensor



Light Sensor



Color sensor



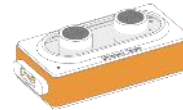
Gyroscope



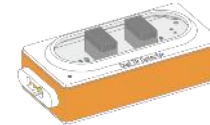
Humiture Sensor



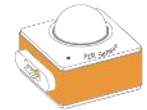
Sound Sensor



Ultrasonic Sensor



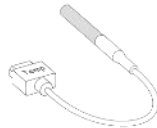
Dual IR Detector



PIR Sensor



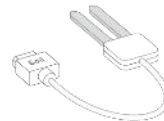
Temperature Sensor



Temperature Probe



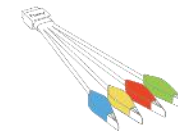
Soil Moisture Sensor



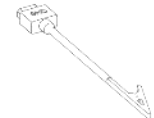
Soil Moisture Probe



Funny Touch



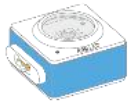
Funny Switch



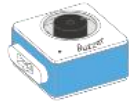
GND Wire

# Neuron Modules Output & Wire

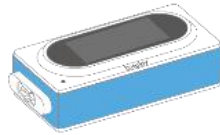
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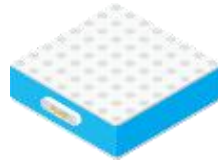
RGB light



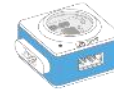
Buzzer



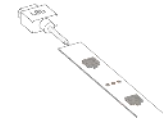
Display



LED Panel



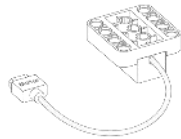
LED Strip Driver



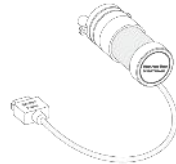
LED Strip



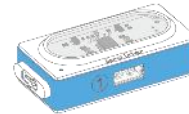
Dual DC Motor Driver



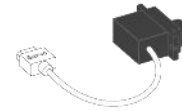
Mini Servo Kit



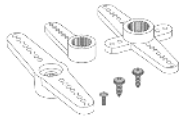
Water Pump



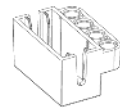
Dual Servo Driver



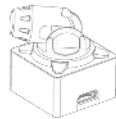
Mini Servo



Mini Servo Kit



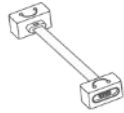
Mini Servo Kit



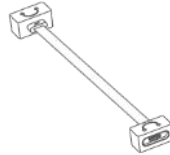
Laser Pointer

# Neuron Modules    Connect & Lock

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Magnetic Connecting Wire (10cm)



Magnetic Connecting Wire (20cm)



USB Cable (100cm)



Neuron Board( compatible with LEGO)



Gel Pad

makeblock



# Product Features

# Simple and durable Connect modules with the magnetic Pogo Pin connectors

The modules can be connected together with the patented magnetic Pogo Pin connectors ,which makes it durable enough.

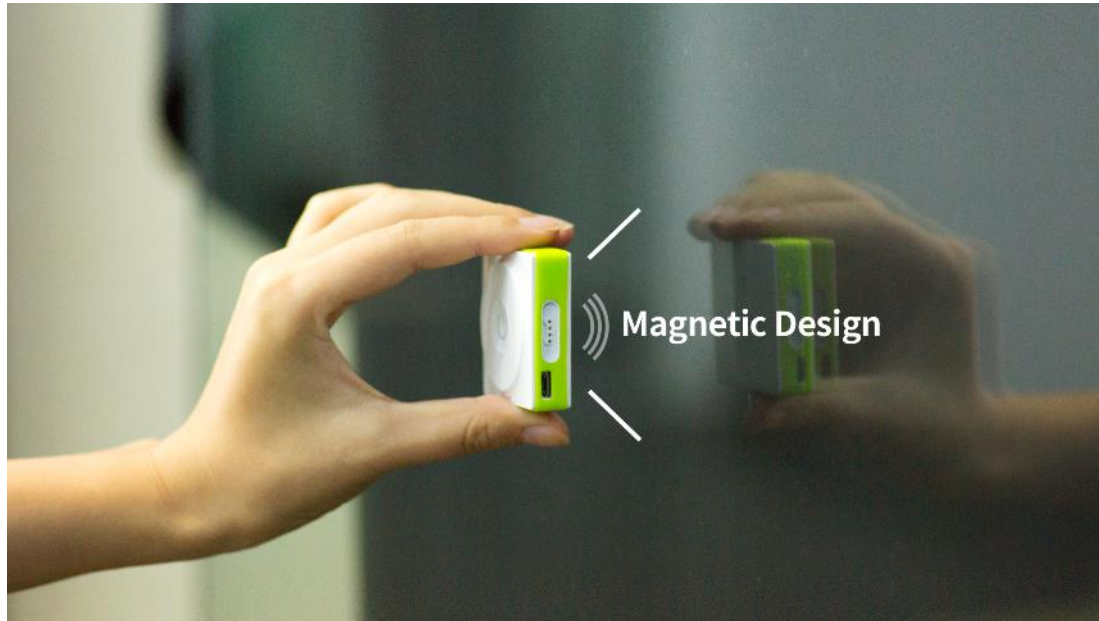




## Magnetic design

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All the Neuron modules have a magnetic back so they can be held on flat magnetized surfaces, like whiteboards or refrigerators. Teachers and parents can use them to instruct children either in class or at home.



# A world of modules unleash the creativity of children

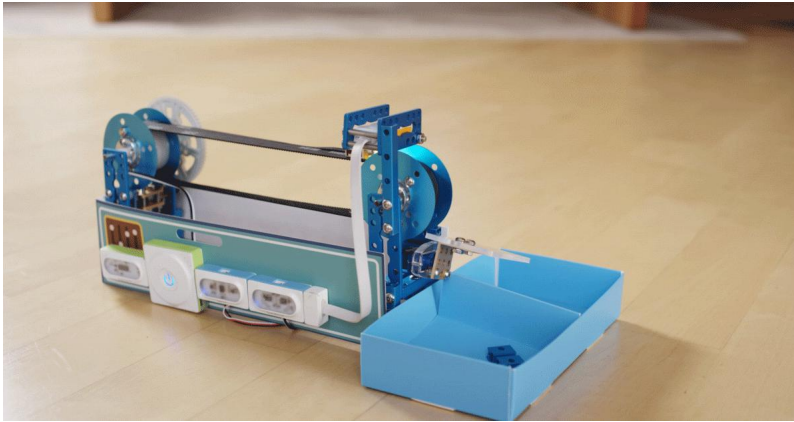
34 electronic building blocks give children quick access to understand how sensors work.  
( More modules are coming.)



# Compatible with Makeblock metal products and LEGO bricks

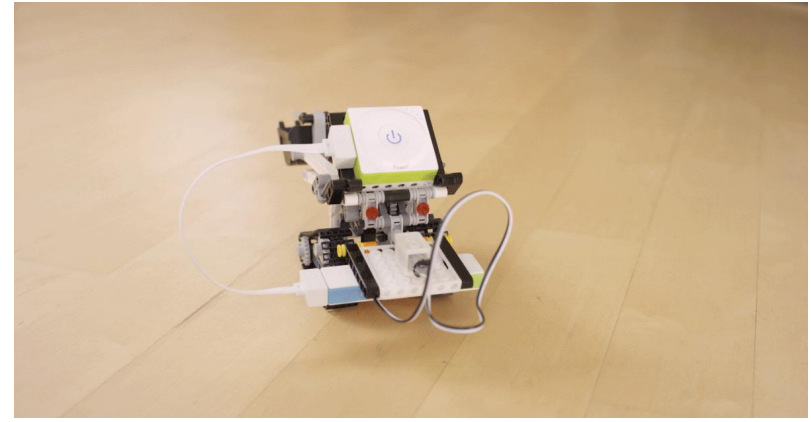
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All the Neuron modules are compatible with Makeblock metal products and LEGO bricks.



Creative project with Makeblock metal products

[△ Click the Slide Show to play the video](#)



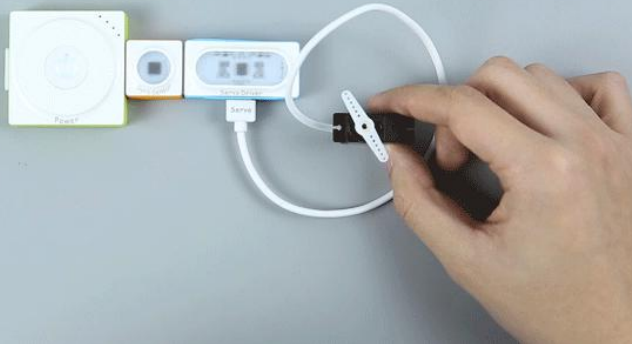
Creative project with LEGO

[△ Click the Slide Show to play the video](#)

## Two modes bring more fun

With the online mode, children program the modules on the app and create gadgets as they like; with the offline mode, children get rid of their tablets and phones and create gadgets directly with their hands.

Shake the modules and the servo will be triggered to rotate. This is all because of the gyroscope.



**Not with App**  
**Offline mode**

[△ Click the Slide Show to play the video](#)

Create different expressions on the app and make them visible on the LED display.

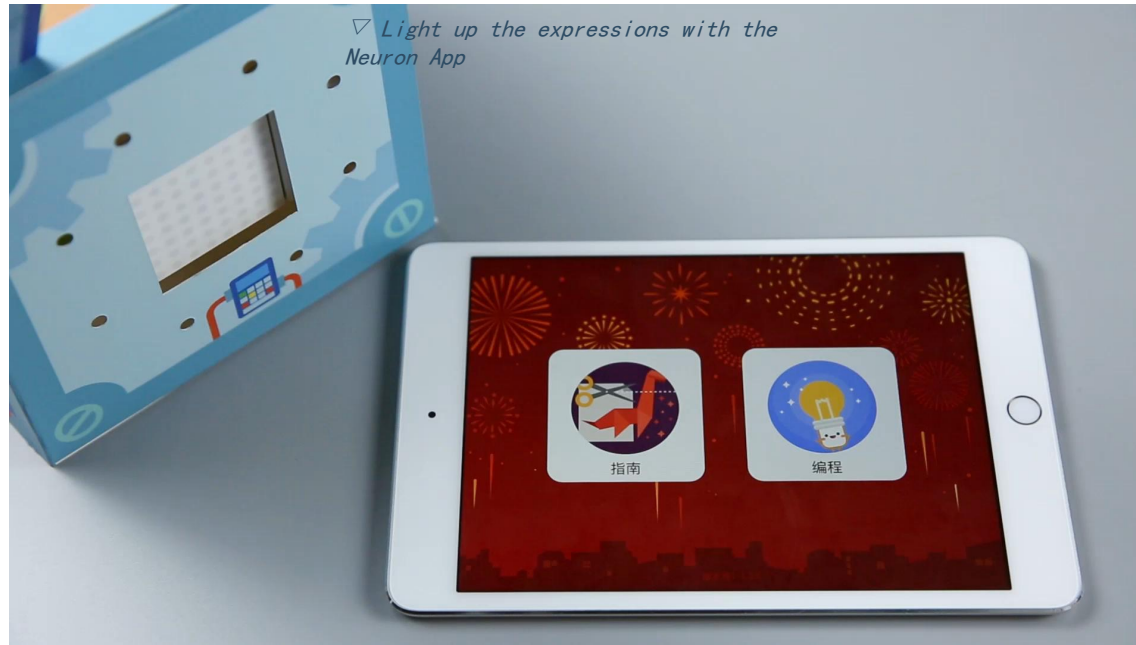


**With App**  
**Online mode**

[△ Click the Slide Show to play the video](#)

# Flow-based programming helps first-time coders out

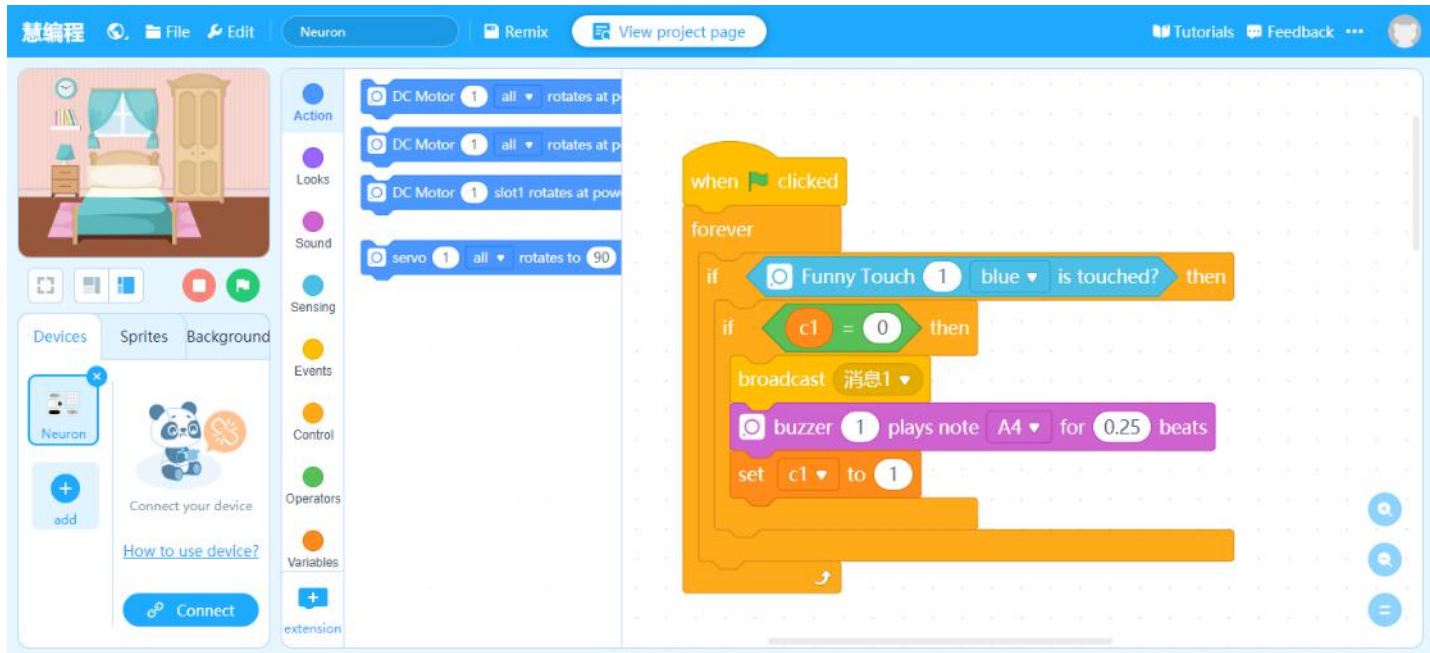
Neuron, paired with flow-based programming software, enables first-time coders to easily picky up from the very start.



△ [Click the image to play the video](#)

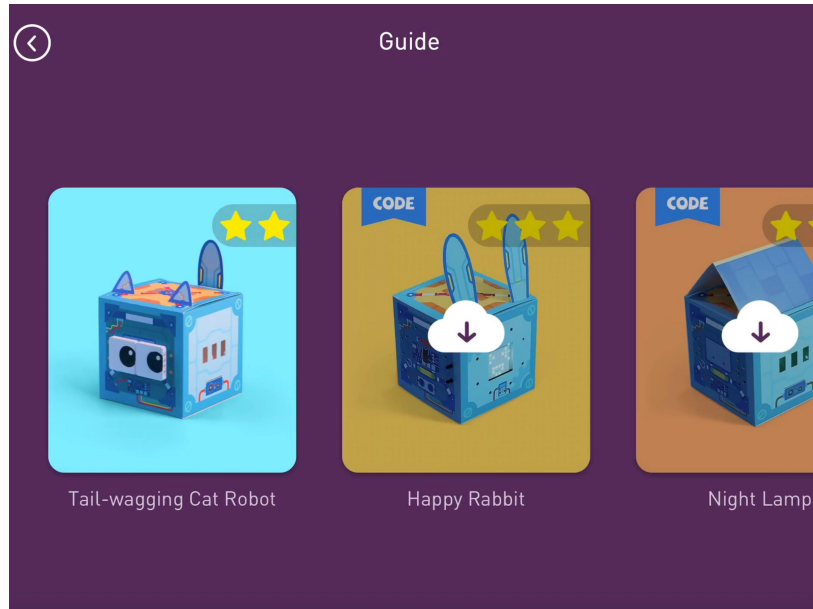
# Support mBlock for advanced programming language

Neuron can work with mBlock 5 (inspired by Scratch 3.0), so kids are able to control Neuron using the coding blocks. Controlling is the first step. Kids are empowered to design engaging stories, games and animations involving Neuron.



# Follow the cases tutorials to upgrade from imitation to creation

The Neuron app includes building instructions and video tutorials, helping children create a multitude of gadgets in a short time. Start from following the instructions and move on to create on your own. Immerse yourself in the fun of creation. (More cases will be updated in the Neuron app)



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# Tutorials and Use Cases



# Creative Lab Kit 2.0 Manual

Neuron Creative Production and Scientific Lab Manual is a tutorial that is designed to help educators and makers use Neuron and give them some inspirations for creating significant projects and courses.

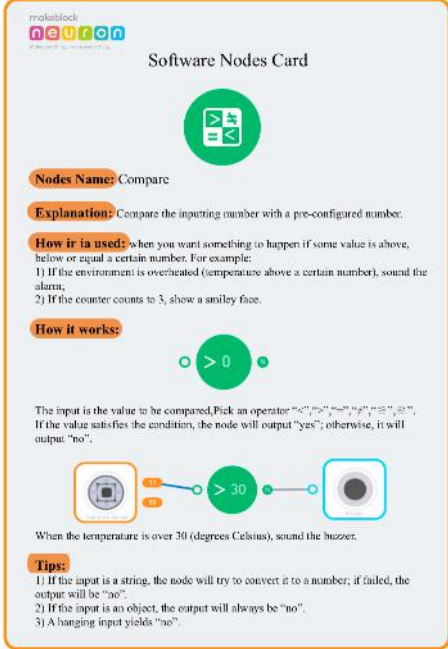
For educators, the tutorial sparks their creativity in the form of Mini Lesson. Guided by the tutorial, educators know how to engage students in fun activities while at the same time using Neuron electronic blocks as teaching aids. In this way, students grasp how sensors work and develop their computational thinking. They are thusly empowered to turn each idea of theirs into reality.



# Creative Lab Kit 2.0 Manual

Neuron Creative Production and Scientific Lab Manual includes 5 parts :

- Neuron Basics
- Mini Lesson : 21 sample projects for 4 topics, *Artist, Engineer, Scientist* and *Maker's Home*
- Lesson Demonstration with craft-making projects
- Hardware Blocks Cards: Introductions to each block on the functions, linking tips and building samples.
- Software Nodes Cards: Explain what we can do with the software nodes work and principles.



makeblock  
neuron  
Software Nodes Card

**Nodes Name:** Compare

**Explanation:** Compare the inputing number with a pre-configured number.

**How it is used:** when you want something to happen if some value is above, below or equal a certain number. For example:  
1) If the environment is overheated (temperature above a certain number), sound the alarm.  
2) If the counter counts to 3, show a smiley face.

**How it works:**

The input is the value to be compared. Pick an operator " $>$ ", " $<$ ", " $=$ ", " $>=$ ", " $<=$ ". If the value satisfies the condition, the node will output "yes"; otherwise, it will output "no".

When the temperature is over 30 (degrees Celsius), sound the buzzer.

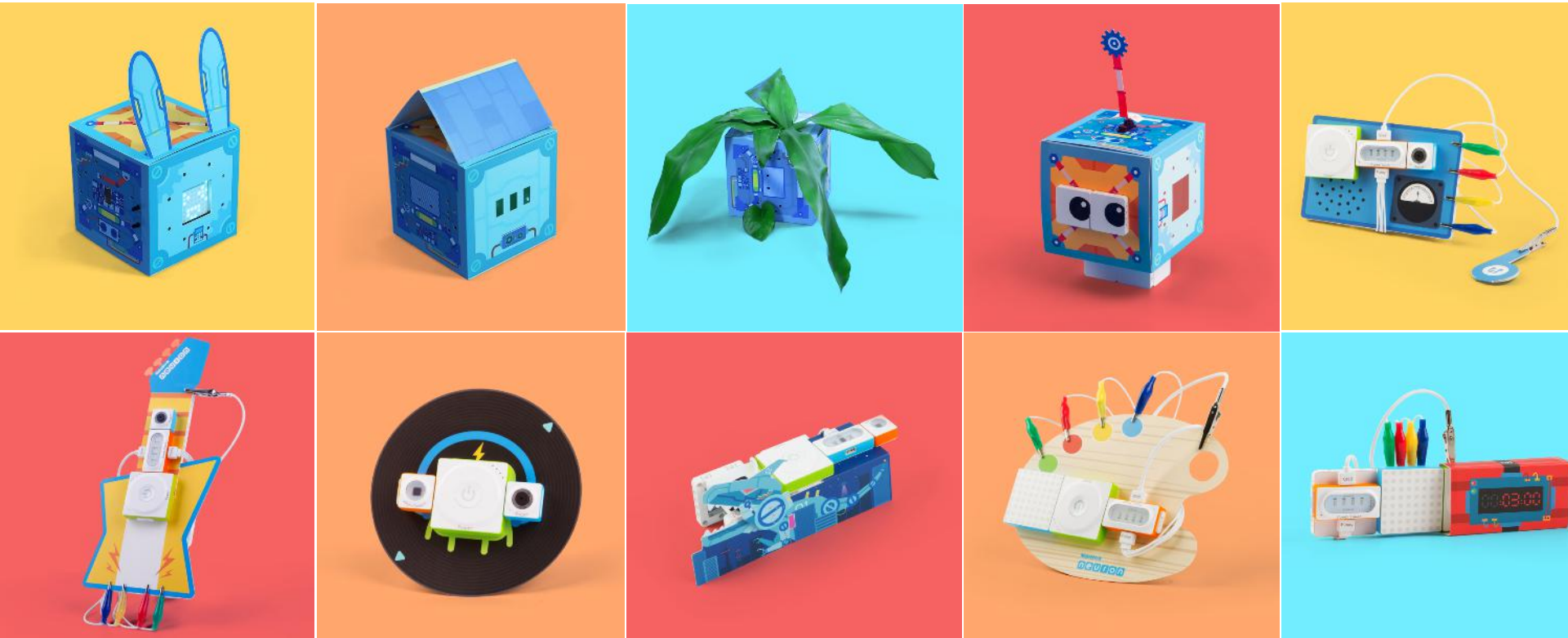
**Tips:**

- 1) If the input is a string, the node will try to convert it to a number; if failed, the output will be "no".
- 2) If the input is an object, the output will always be "no".
- 3) A hanging input yields "no".

Download: <http://education.makeblock.com/zh-hans/resource/neuronv4/>

# Cases

For more cases, click the link: <http://education.makeblock.com/resource/>

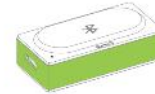
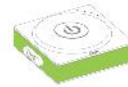


\* Paper form is not included in creative lab kit 2.0.



## Happy Rabbit

### Block List



0  
1

A happy rabbit is changing its expressions.

0  
2

### Principle

The LED display will show different expressions according to the commands.

0  
3

### Materials

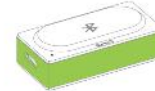
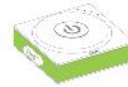
1. Modules: Power, Bluetooth, LED panel
2. Accessories: magnetic sticker\*3、 Friction pin connector\*8
3. Other: Paper box,, Paper rabbit ear\*2

\* Paper form is not included in creative lab kit 2.0.

## Night Lamp



### Block List



0  
1

Knock the desk to light up the lamp.

0  
2

### Principle

When you knock the desk,, the gyroscope will detect the vibration and light up the LED panel.

0  
3

### Materials

1. Modules: Power, Bluetooth, LED panel, Gyroscope sensor
2. Other: Paper box, Paper roof craft

\* Paper form is not included in creative lab kit 2.0.

# Musical Leaves

## Block List



01 Touch the leaves and the leaves will make a sound! You can play the music together with other people.

02 **Principle**  
You will use the Funny Touch here. When the switch is touched by one or more persons, the buzzer will make different sounds. At the same time, other natural materials like leaves, flowers and fruits can also serve as conductors.

03 **Materials**

1. Modules: Power, Funny Touch , Buzzer
2. Accessories: Funny switch, GND wire
3. Other: Paper box, fresh leaves( or any other conductors, like stem, leaves, flowers and fruits. )

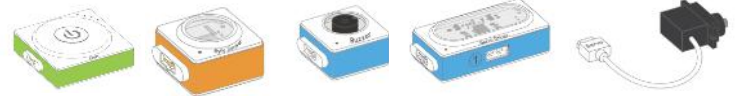


\* Paper form is not included in creative lab kit 2.0.



## A Naughty Robot

### Block List



0  
1

Shake the robot and it will make a crazy sound. The harder you shake it, the crazier it will sound.

0  
2

#### Principle

The axis of the gyroscope, X,Y,Z, indicates different sounds of the buzzer; when you shake the gyroscope and changes the axes values, the buzzer will sound different.

0  
3

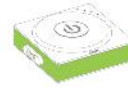
#### Materials

1. Modules: Power, Gyroscope, Buzzer, Dual servo driver, Servo
2. Accessories: Neuron board\*9, Friction Pin connector\*12, Servo hub
3. Other: Paper box, Paper aerals

\* Paper form is not included in creative lab kit 2.0.

# Telegraph

## Block List



0  
1

Children can know about how a telegraph works.  
Yes, the Morse Code!

0  
2

### Principle

Touch the alligator clips to make the buzzer beep.

0  
3

### Materials

1. Modules: Power, Funny Touch, Buzzer
2. Accessories: Neuron board\*6, Friction Pin connector\*10, GND wire, Funny Switch
3. Other: Paper telegraph

\* Paper form is not included in creative lab kit 2.0.





## Electric Guitar

### Block List



0  
1

Make yourself an electric guitar.

0  
2

### Principle

You will use the Funny Touch here. When an individual or multiplayers form a circuit, the buzzer will make different sounds.

0  
3

### Materials

1. Modules: Power, Funny Touch, Buzzer
2. Accessories: Funny Switch, GND Wire, Friction pin connector\*12, Neuron board\*7
3. Other: Paper guitar 1, Paper guitar 2

\* Paper form is not included in creative lab kit 2.0.

# Gramophone



## Block List



0  
1

Rotate the CD to play your song.

0  
2

### Principle

When the gyroscope rotates, it will trigger the buzzer to make sounds with different frequencies.

0  
3

### Materials

1. Modules: Power, Gyroscope, Buzzer
2. Accessories: Friction pin connector, Neuron board
3. Other: Paper gramophone

\* Paper form is not included in creative lab kit 2.0.

# Dinosaur Biter



## Block List



0  
1

The dinosaur is violent. Watch out its sharp teeth!

0  
2

### Principle

When you touch the paper dinosaur, the gyroscope will be vibrated, which will make the motor swing by angles of 0-90°. Then the mouth of dinosaur will be triggered to shake.

0  
3

### Materials

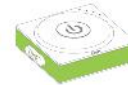
- 1.Modules: Power, Gyroscope, Dual servo driver, Servo
- 2.Accessories: Rubber band, Servo hub, Friction pin connector\*12, Neuron board\*7
- 3.Other: A paper dinosaur

\* Paper form is not included in creative lab kit 2.0.

## Palette of Lights



### Block List



0  
1

Try different combinations to mix your own colors.

0  
2

### Principle

The alligator clips with different colors are connected with the GND wire. If you touch different alligator clips, the LED panel will change its color accordingly.

0  
3

### Materials

1. Modules: Power, Funny Touch, LED panel
2. Accessories: Neuron board\*4, Friction Pin Connector \*6, Funny Switch, GND Wire
3. Other: Paper palette of lights

\* Paper form is not included in creative lab kit 2.0.

# Bomb Disposal



## Block List



0  
1

Take off the alligator clips gently. Be careful not to make the bomb boom.

0  
2

### Principle

Take off all the alligator clips to clear the LED display; be careful to keep stable and gentle when removing the clips, otherwise the gyroscope will detect the vibration and trigger the buzzer.

0  
3

### Materials

1. Modules: Power, Funny Touch, LED panel, Buzzer, gyroscope
2. Accessories: Neuron board\*5, Friction Pin Connector\*8, Funny Switch, GND Wire
3. Other: The Paper ticking bomb

\* Paper form is not included in creative lab kit 2.0.

makeblock



# Competitive Analysis & Specifications

# Competitive Analysis

	Makeblock Neuron	littleBits	KOOV
Connect	Connect in a snap	Need adjustments	Connect in a snap
Programming Difficulty	Easy and perfect for first-time coders (flow-based programming)	Difficult (need instructions)	Difficult(need instructions)
How to lock modules	Free (The magnetic back allows modules design to be held on any magnetized surfaces)	One for one (can only be fixed to the holes on the blocks)	Interlocking
Support AI	Yes (face recognition, age detection, text recognition, speech recognition)	No	No
Support IoT	Yes	Some kits support	No
Accuracy of Input	Digital input Large room for creation	Analog Input Limited room for creation	Analog Input Limited room for creation
Durability	Highly durable (all-in-on design)	Easy to be damaged(circuit board exposure)	Highly durable(all-in-on design)

# Makeblock Neuron Creative Lab Specifications

Age	6+
Software	Neuron (iOS, Android tablet) mBlock (mac OS, Windows)
Block Category	<ul style="list-style-type: none"><li>➤ Energy + Communication: Power, Bluetooth, Wireless-T, Wireless-R</li><li>➤ Input: Dual IR Detector, Light Sensor, Color Sensor, Ultrasonic Sensor, Gyro Sensor, Temp Sensor, Sound Sensor, Humiture Sensor, PIR sensor, Soil Moisture, Ranging Sensor</li><li>➤ Output: DC Motor Driver, Servo Driver, RGB LED, LED Panel ,LED Strip, Display, Buzzer</li><li>➤ Control: Button, Knob, Joystick, Funny Touch ,Voice Recognition</li></ul>
Battery	3.7V 950mAh Lithium Battery Input: 5V/1A Max Output: 5V/2A Max
Wireless Communication	Bluetooth
Dimensions	<ul style="list-style-type: none"><li>➤ 24mm x 24mm x 14mm Max: Light Sensor, Color Sensor, Gyro Sensor, Temp Sensor, Sound Sensor, Humiture Sensor, PIR sensor, Button, Knob, Joystick, RGB LED, Soil Moisture, Ranging Sensor</li><li>➤ 24mm x 48mm x 14mm Max: Dual IR Detector, Bluetooth, Voice Sensor, Ultrasonic Sensor, Funny Touch, Display, DC Motor Driver,9g Servo Driver ,Wireless-T/R</li><li>➤ 48mm x 48mm x 14mm Max: Power, LED Panel</li></ul>