AI Sound Commanded Wheels

Warning! Not suitable for children under 36 months because of small part(s) – Choking hazard. Only for use by children over 8 years old. To be used solely under the strict supervision of adults that have studied the precautions given in the experimental set. Hair entanglement may result if the child's head is too close to the motorized unit of this toy. This toy contains functional sharp point – on the component leads. Do not short-circuit the battery terminals and motors, which may cause overheating. Do not lock the motor or other moving parts, which may cause overheating. Use with care and only under supervision of adult.

Packaging materials are not toys. Please remove all packaging and packing tags/wires before giving this toy to your child.

CAUTION! Take extra care during unpacking and use.
Please take note: As an extra precaution, check this toy regularly for signs of wear or damage. Read the instructions carefully before use, then follow them and keep them for reference.

Warning! Do not short-circuit the battery terminals and motor, which may cause overheating. The wires are not to be inserted into socket outlets.

Batteries required: 3 x AAA (Not included)

<u>**IMPORTANT: Keep these instructions. DO NOT DISCARD.**</u>

1. Only adults should install and replace batteries.
2. Alkaline batteries are recommended.
3. If the device has not been used for a long time, remove the batteries.
4. Do not use rechargeable batteries.
5. Do not mix old and new batteries.
6. Do not mix alkaline, standard (carbon zinc) or rechargeable (nickel cadmium) batteries.
7. Exhausted batteries are to be removed from the toy.
8. Non-rechargeable batteries are not to be recharged.
9. The supply terminals are not to be short-circuited.
10. Only batteries of the same or equivalent type as recommended are to be used.
11. Batteries are to be inserted with the correct polarity.
12. Do not dispose of batteries in fire, batteries may explode or leak.
13. Batteries may explode or leak if misused.

If at any time in the future you should need to dispose of this product please note that Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice.(Waste Electrical and Electronic Equipment Directive)

Introduction

Artificial Intelligence (A.I.) is a branch of *Science* which deals with helping machines find solutions to complex problems in a more human-like fashion. This generally involves borrowing characteristics from human intelligence, and applying them in a language the computer understands. Researchers are creating systems which can mimic human thought, understand speech, beat the best human chess player, and countless other feats never before possible.

The word "robot" originates from the Czech word robota, meaning drudgery. A robot is something that senses the world in some way, does some sort of computation, deciding what to do, and then acts on the world outside itself as a result. Basically a robot consists of:

- A mechanical device, such as a wheeled platform, arm, or other construction, capable of interacting with its environment
- Sensors on or around the device that are able to sense the environment and give useful feedback to the device
- Systems that process sensory input and instruct the device to perform actions in response to the situation

The science and technology that deals with robots is called robotics. These AI robot kits let you explore how robot sensors work to connect them to the outside world.

What does it do?

The AI Sound Commanded Wheels will move according to the number of claps you made:

Number of Claps	Command
1	Stop
2	Forward
3	Backward
4	Turn Right
5	Turn Left

Table 1

When you give a command, make sure there is no long pause in between the claps, otherwise the robot will interpret it as two commands and it will not move as you desired.

How does it work?

The sound is detected by a microphone on the circuit board which act as the ear of the microcomputer. When some loud noise is made, like when you clap hands, the microphone converts it into a series of ON-OFF signal. The microcomputer receives this signal and decodes the command. It then controls the motors to move accordingly.

Components:

1 Wheels x2
2 Wheel covers x2
3 Gearbox x1
4 Middle frame x1
5 Ball holder part x2
6 Ball x1
7 Battery box x1
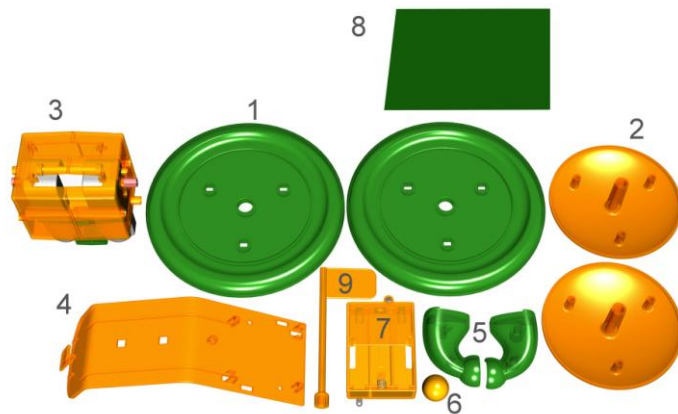8 Circuit board x1
9 Flag x1

Fig. 1

Steps:

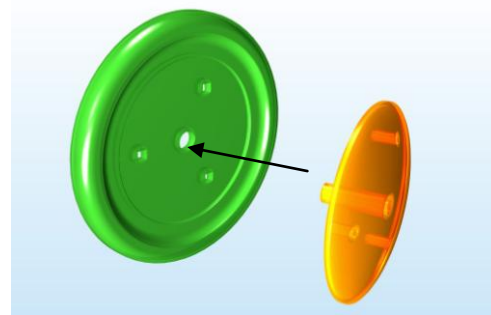1. Attach the wheel covers (2) on each wheel (1). (Fig. 2)

Fig. 2

2. Install the ball (6) inside the ball holder parts (5) and attach them into the middle frame (4) at the same time as shown in Fig. 3.

Fig. 3

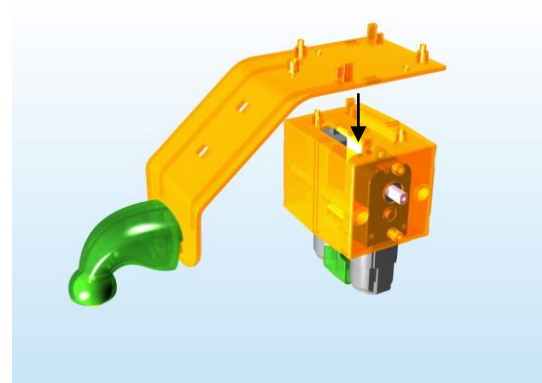3. Install the assembly in step 2 on the Gearbox (3). (Fig. 4)

Fig. 4

Fig. 5

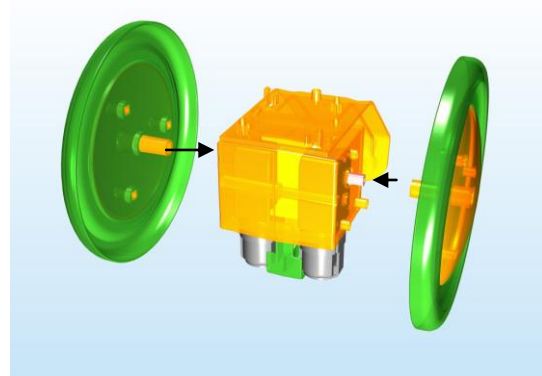4. Attached the wheels of step 1 to both sides of the gearbox. (Fig. 5)

5. Install the battery box (7) to the middle frame as shown in Fig. 6.
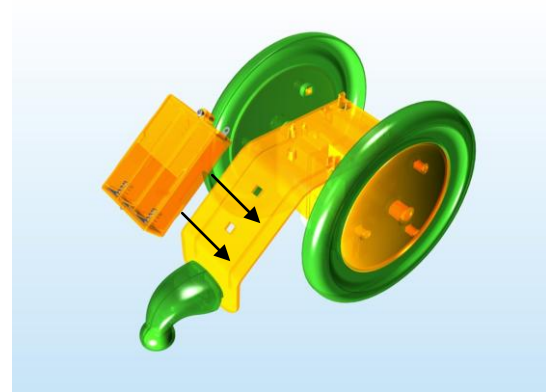
Fig. 6

6. Use a screwdriver (not included) to loosen the screw of the battery cover and install 3 AAA size batteries into the battery box according to the polarity mark. Replace the battery cover and tighten the screw. (Fig 7)
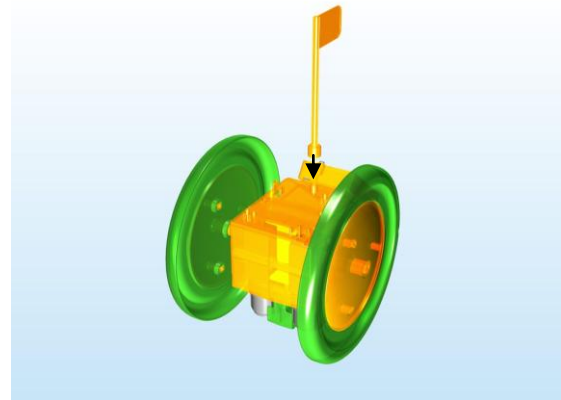
Fig. 7

7. Insert the flag (9) as shown in Fig. 8.

Fig. 8

7. As shown in Fig.9 and 10, install the circuit board (8) on the middle frame and connect the wires:
   (a). Battery plug to the socket "3V" (A).
   (b). Left motor plug to socket "Left" (L).
   (c). Right motor plug to socket "Right" (R).
   Done!

Fig. 9

L
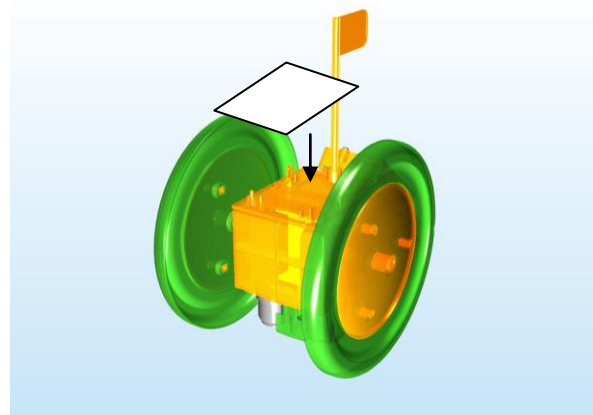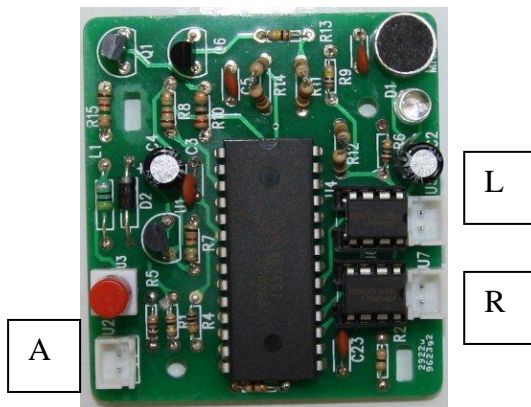
R

A

Fig. 10

How to Play:

Play in a quiet place so that the robot will not be disturbed by other noise. Press the red power button to switch it on. Clap your hands to command the unit to move accordingly, as shown in Table 1 on Page 3. You need to finish each command within 2-1/2 seconds. The LED light on the circuit board will blink to acknowledge the reception of a correct command. Note that there will be a short delay for the robot to response after it heard the command. It is because it has to make sure the command is really completed.

Battery Installation:

The unit uses three AAA/LR03 (1.5V X 3) batteries (not included)

1. Refer to Step 6 above to install batteries.
2. Replace with new batteries when the movement becomes slow or it does not respond.
3. Insert new batteries according to the polarity marks.