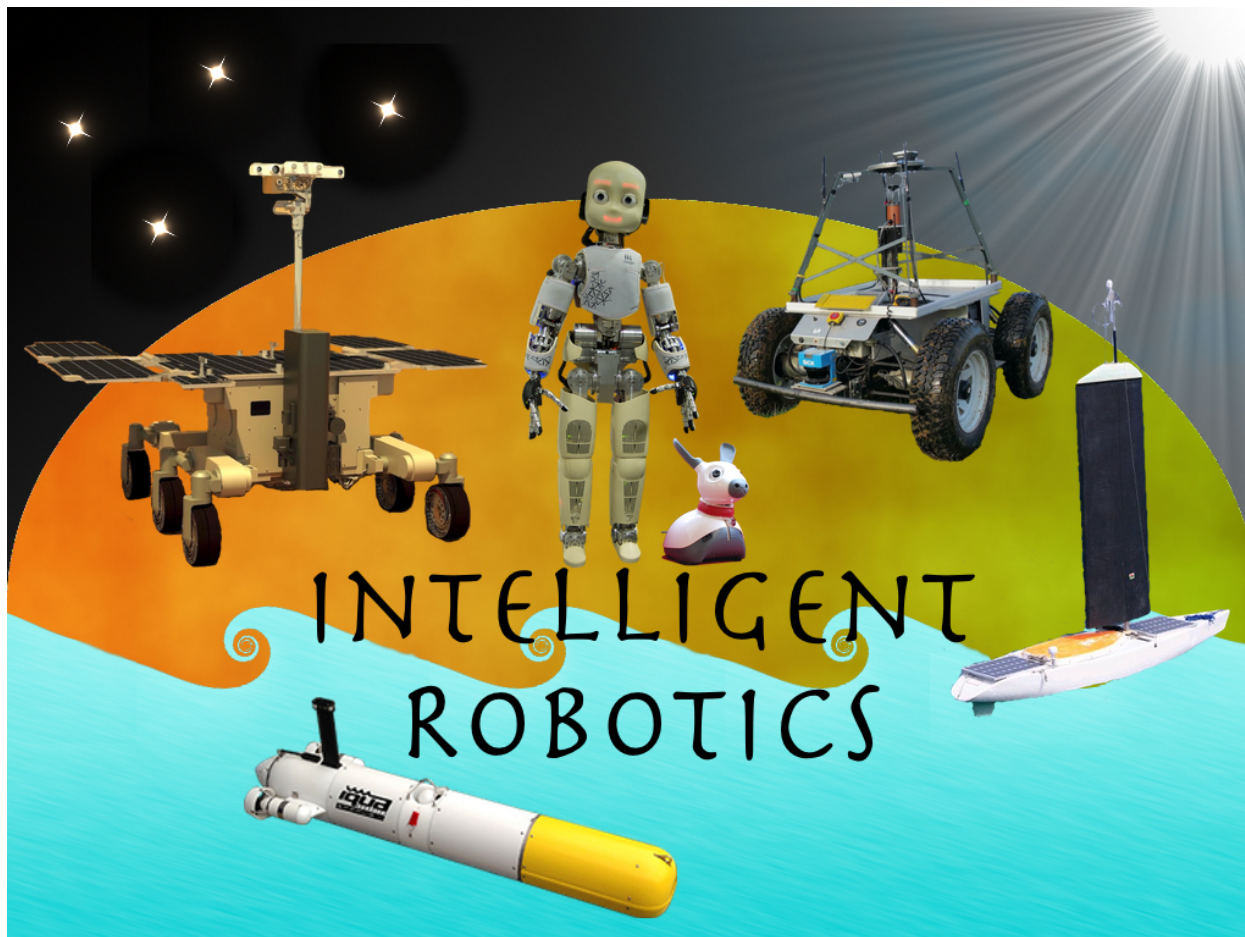


Aberystwyth Robotics Week 2021



Family activity book

<i>Word search</i>	<u>3</u>
<i>Connect the iCub robot to the power supply</i>	<u>4</u>
<i>Colouring in</i>	<u>5</u>
<i>Spot the difference</i>	<u>7</u>
<i>Label up the sensors on MiRo</i>	<u>8</u>
<i>Navigate the maze</i>	<u>9</u>
<i>Pair them up</i>	<u>10</u>
<i>Design your own robot</i>	<u>12</u>
<i>Robot crafts</i>	<u>13</u>
<i>Answers</i>	<u>14</u>

Word search

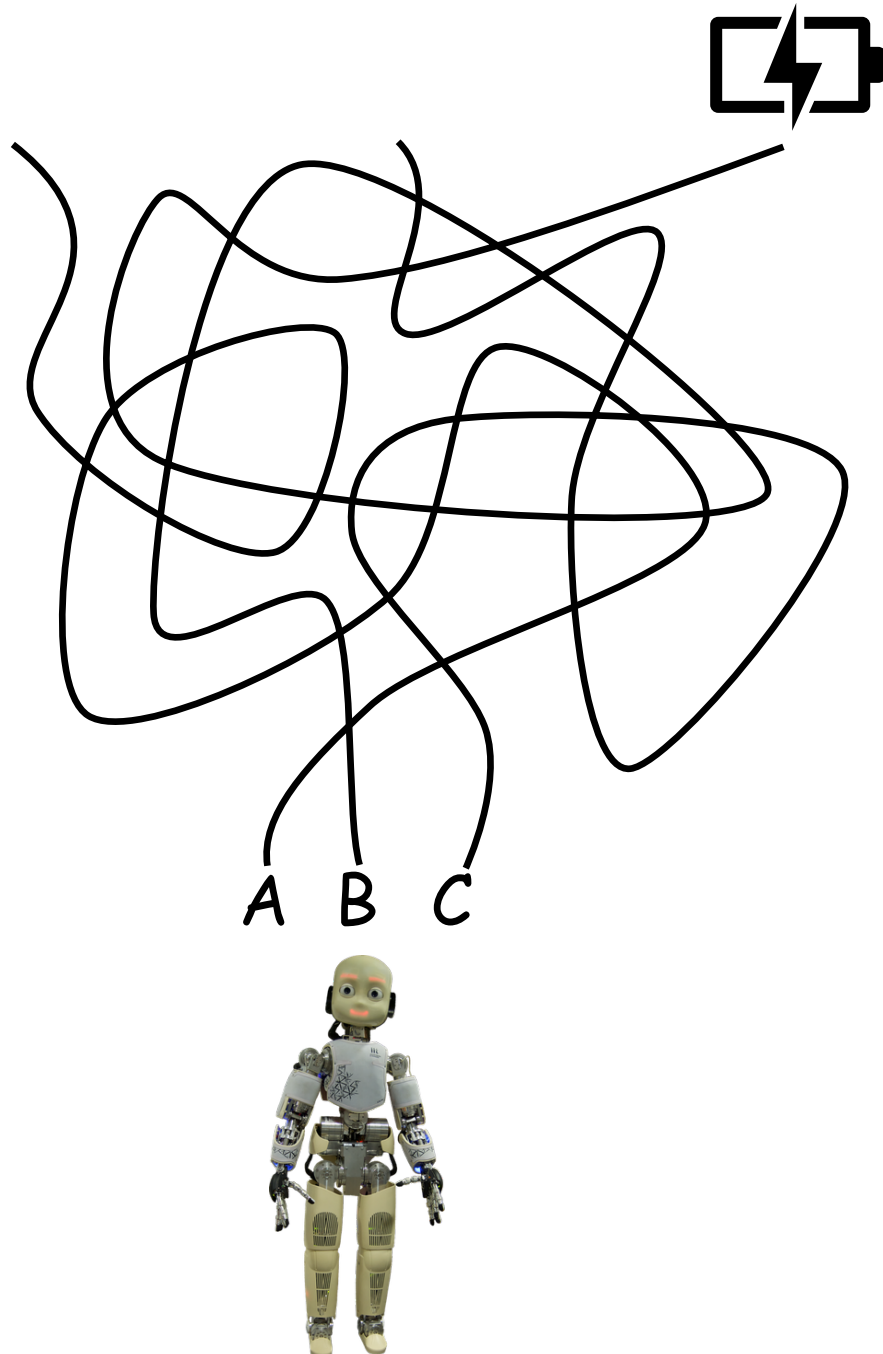
Find these robot themed words in the grid below

Robot	Motors	Microphones
Wheels	Sensors	Lights
Legs	Laser	
Batteries	Cameras	

G	R	E	M	S	L	E	S	E	N	S	O	R	S
L	L	A	C	B	S	T	S	S	E	A	I	H	I
S	T	C	A	M	E	R	A	S	A	S	N	E	G
E	S	E	N	O	A	A	R	R	G	R	C	I	R
N	P	S	M	O	T	O	R	S	S	B	O	S	S
O	A	W	W	E	S	O	E	A	G	A	O	R	B
H	R	S	W	T	R	M	I	B	C	T	S	R	O
P	A	I	H	O	I	A	L	W	L	T	C	H	N
O	E	O	E	B	R	E	P	S	R	E	H	O	E
R	S	S	E	O	S	H	E	O	O	R	I	R	I
C	L	E	L	R	O	G	B	S	O	I	E	H	C
I	T	L	S	A	O	A	T	O	O	E	E	I	R
M	H	R	L	I	G	H	T	S	S	S	S	R	S
C	S	G	E	L	G	L	H	E	L	A	S	E	R

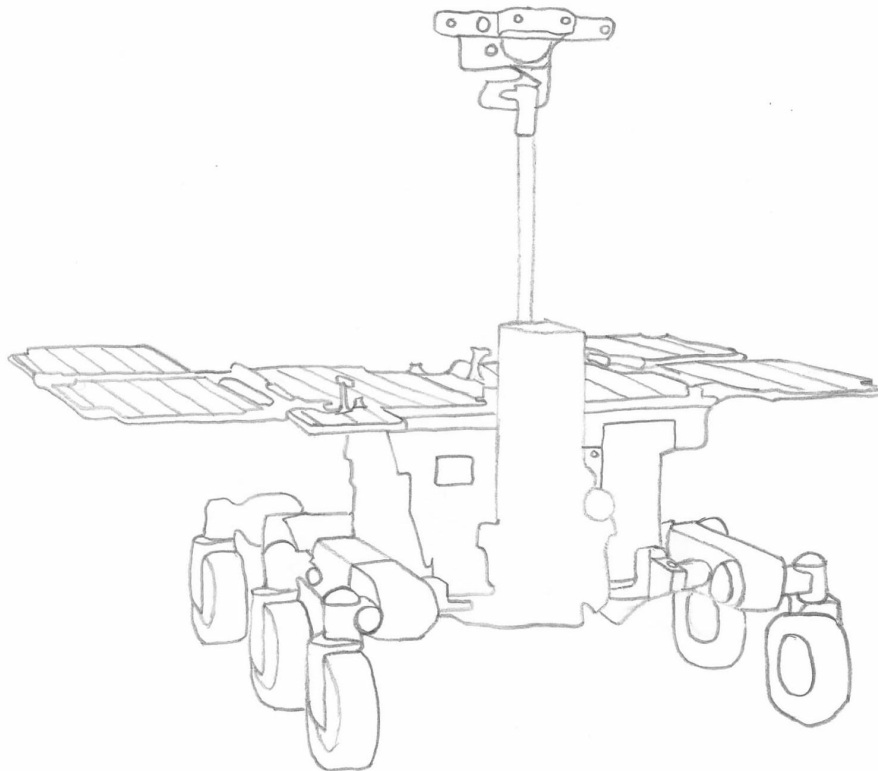
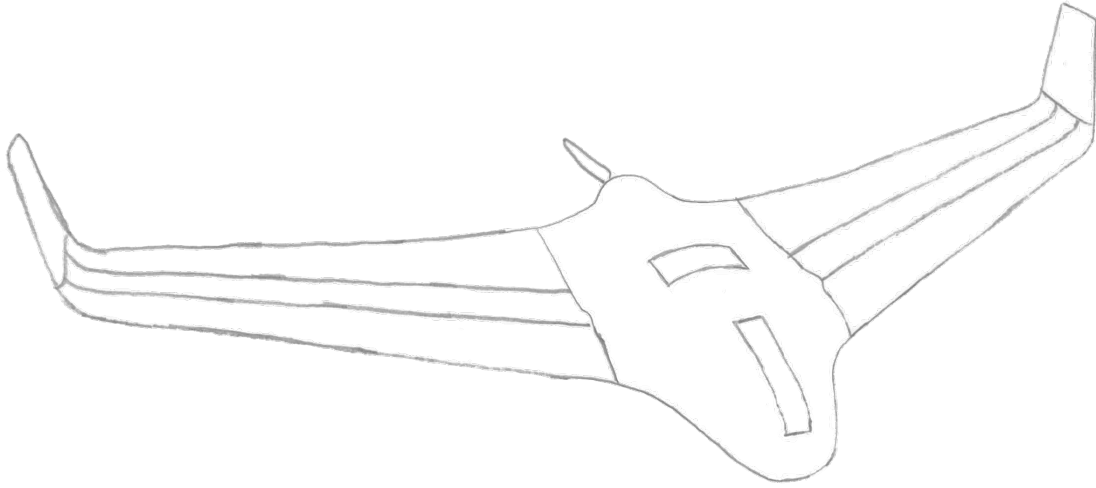
Connect the iCub robot to the power supply

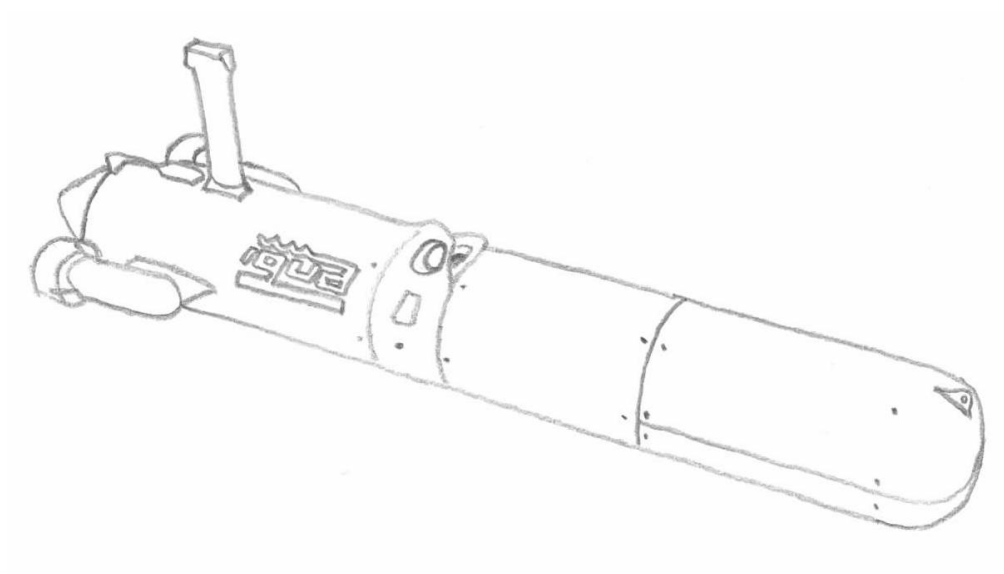
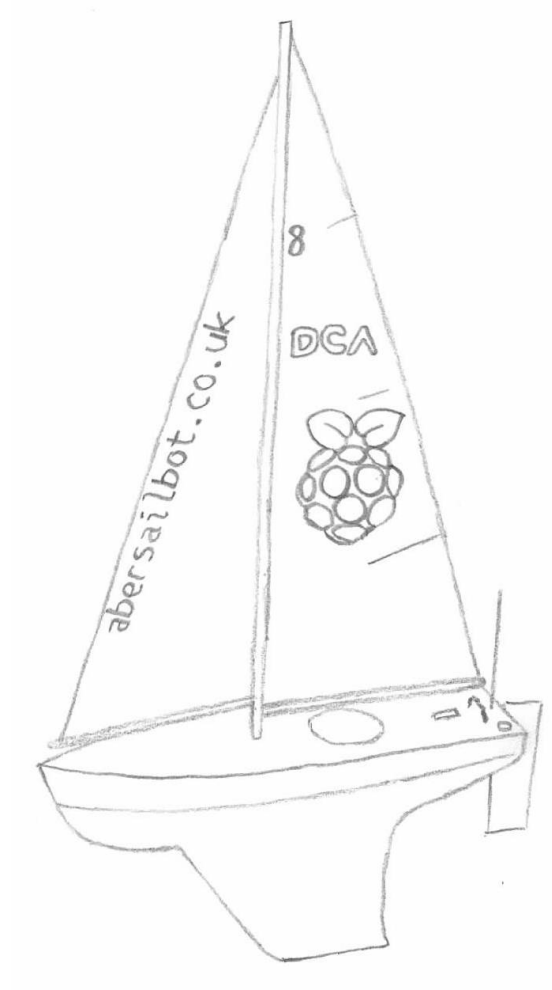
The power cables have all been tangled together. Help the iCub find the right cable to plug in.



Colouring in

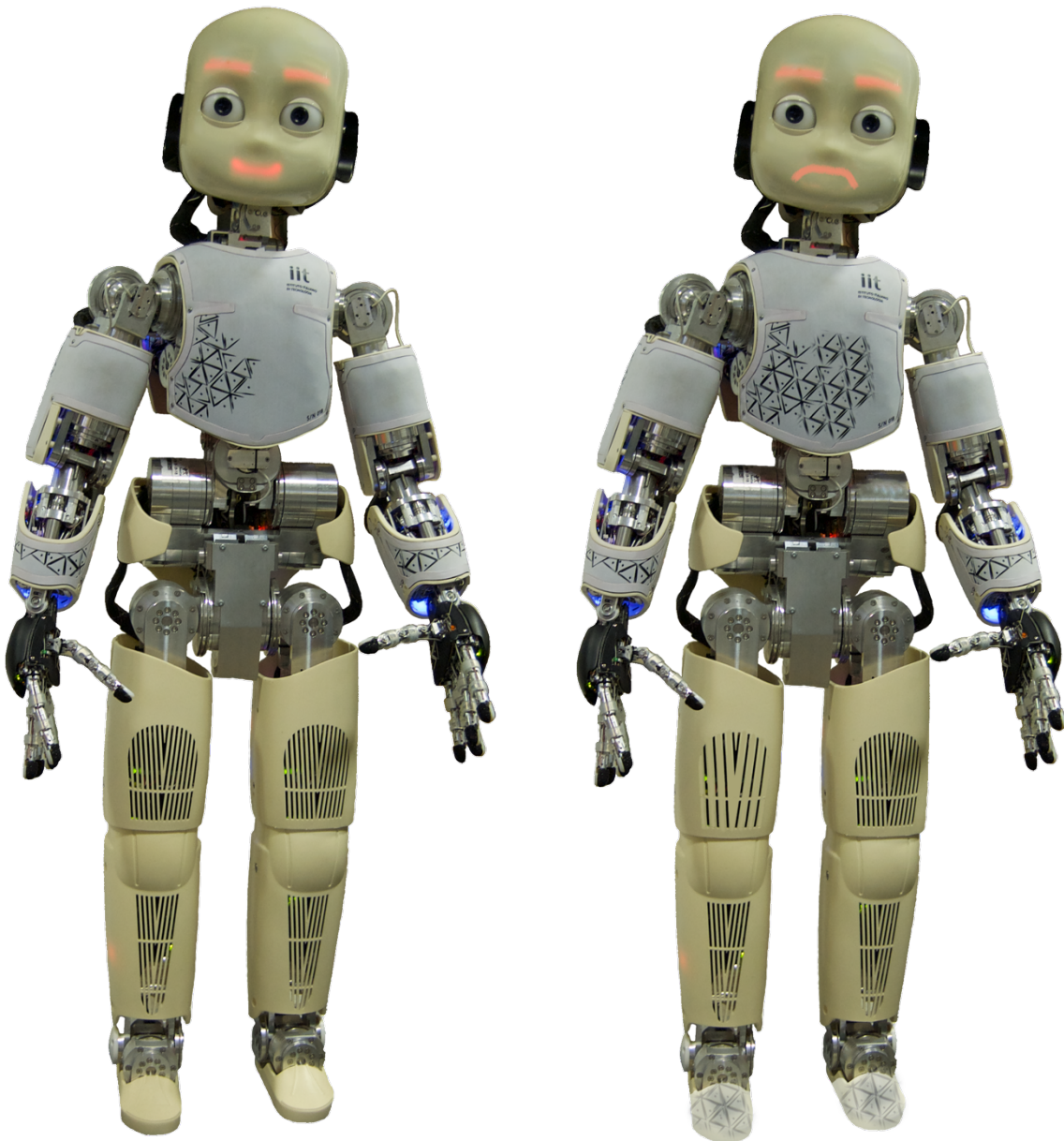
Here's a selection of our robots for you to colour in.



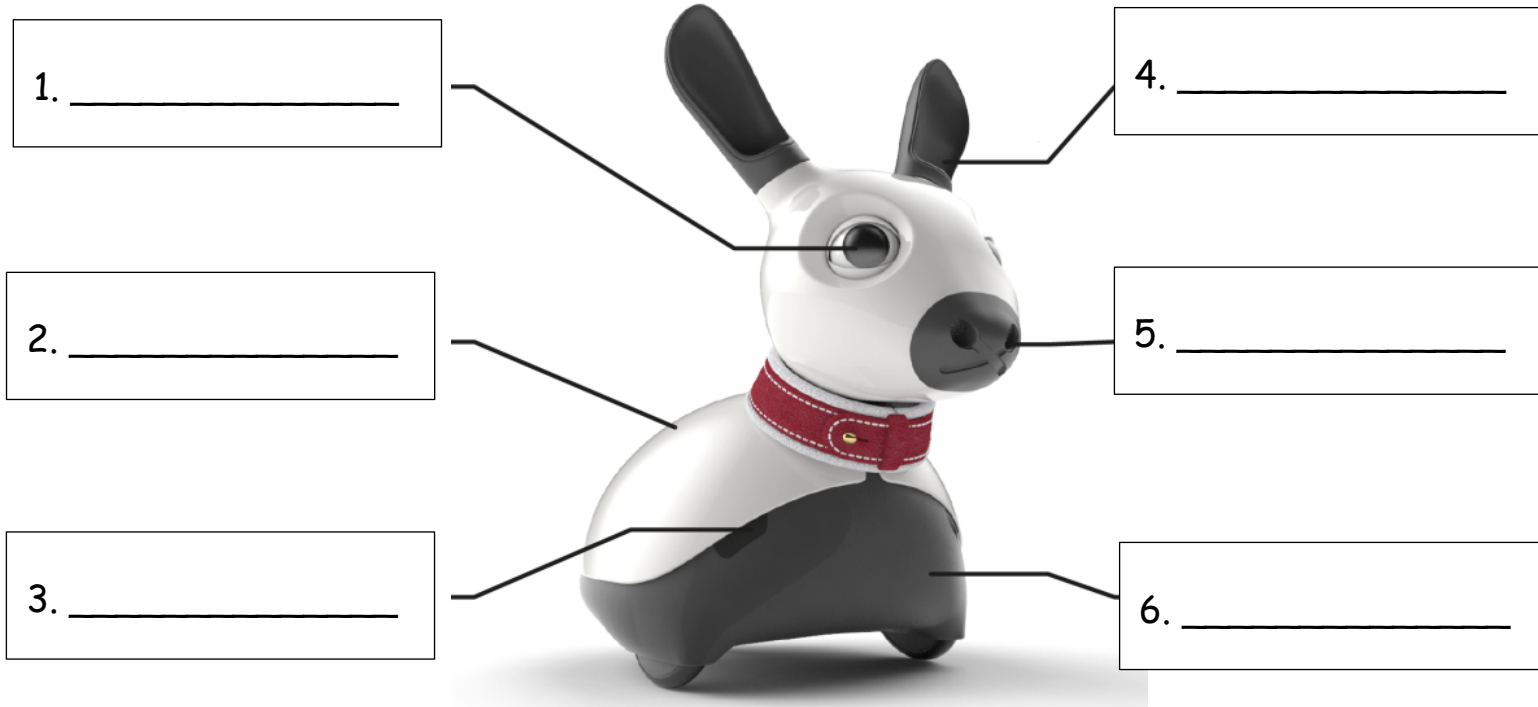


Spot the difference

There are 5 differences between the two iCubs below. Can you spot them all?



Label up the sensors on MiRo



Sensors are:

Sonar

Stereo Cameras

Stereo Microphones

Light

Touch

Cliff

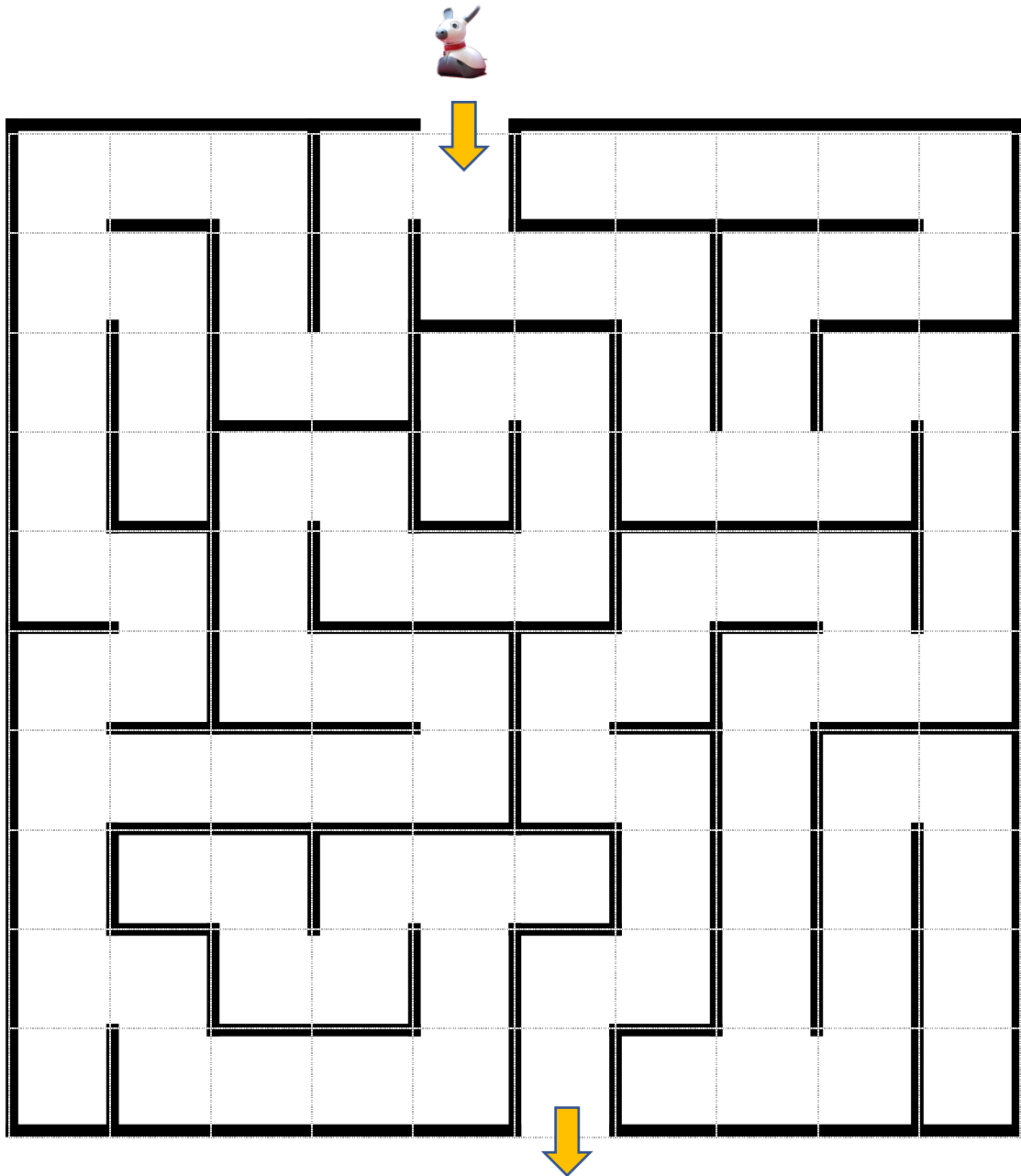
Navigate the maze

Help Miro navigate the maze by using the instructions below:

Forward 1 Moves forward 1 square in the maze, the number can be changed as required.

Turn Left Turns left 90 degrees

Turn Right Turns right 90 degrees



Pair them up

Types of Sensors

What it Does

Ultrasonic (sonar)

This detects contact. It could be a button or like the screen on a smart device.

Light sensors

Sends out sound to detect objects by listening to the echoes as the sound bounces off it.

Camera

A video camera that 'sees' heat allowing it to operate in the dark or locate heat sources.

Microphone

Measures the light level around the robot. Can be used to guide the robot towards a light or away from it.

Thermal camera

Placed under moving robots, they use infrared light to check for drops or steps in the floor to stop the robot from falling off ledges.

Touch sensor

A video camera capturing colour images of the environment in front of the robot. This is useful to recognise and avoid objects as necessary.

Cliff sensor

Sends out beams of infrared light and measures how long they take to bounce back. This allows robots to spot objects in front of them and how far away they are.

Lidar (laser)

Listens to sounds around the robot. With more than one they can even locate the direction of the sound.

Match the robot to their description



Idris

I'm an autonomous drone capable of flying long distances and taking arial photographs to survey changing landscapes.



ExoMars

I want to explore other planets. I'm destined to seek out life on Mars using special cameras and my drilling arm.



X8

I'm the size of a car and can drive off-road. I can autonomously follow a dirt track, surveying my surroundings as I go.



Afanc

I'm designed to work safely alongside people using my grippers to manipulate objects.

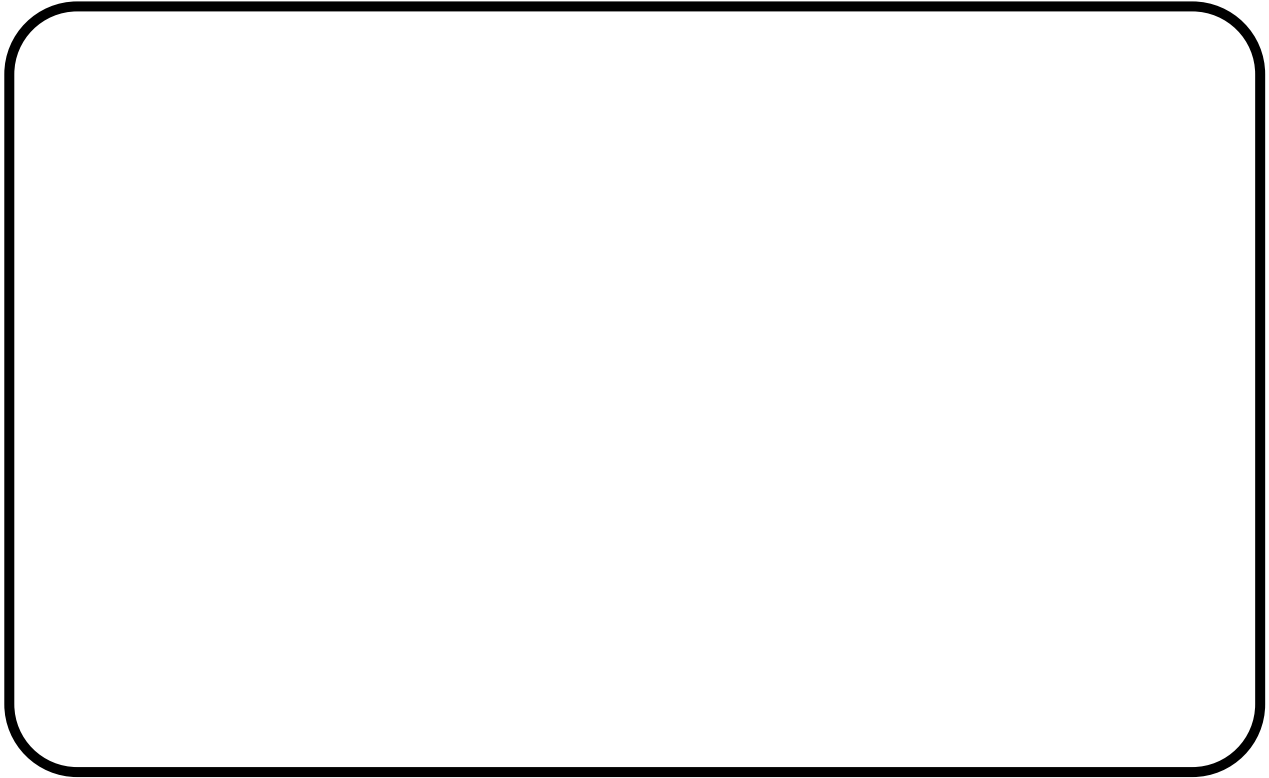


Yumi

I'm at home in the sea, using my sonar and special underwater camera to study marine environments

Design your own robot

Now it's your turn to design your own robot! Draw your robot in the box below



My robots name is:

Describe what your robot can do:

Robot crafts

Using materials you can find around the house (with permission from an adult) have a go at building your own model robot. Some items you might like to find are:

- Tin Foil
- Paper/Card
- Colouring Pens/Pencils/Crayons
- Glue
- Scissors (used with adult supervision)
- Pipe Cleaners
- Drinking Straws
- Googly Eyes



You can find some templates, as well as examples others have made by visiting our Robot Crafts page:

<https://fbaps-outreach-hub.dcs.aber.ac.uk/CompSci/Robotics/Craft/crafts.html>

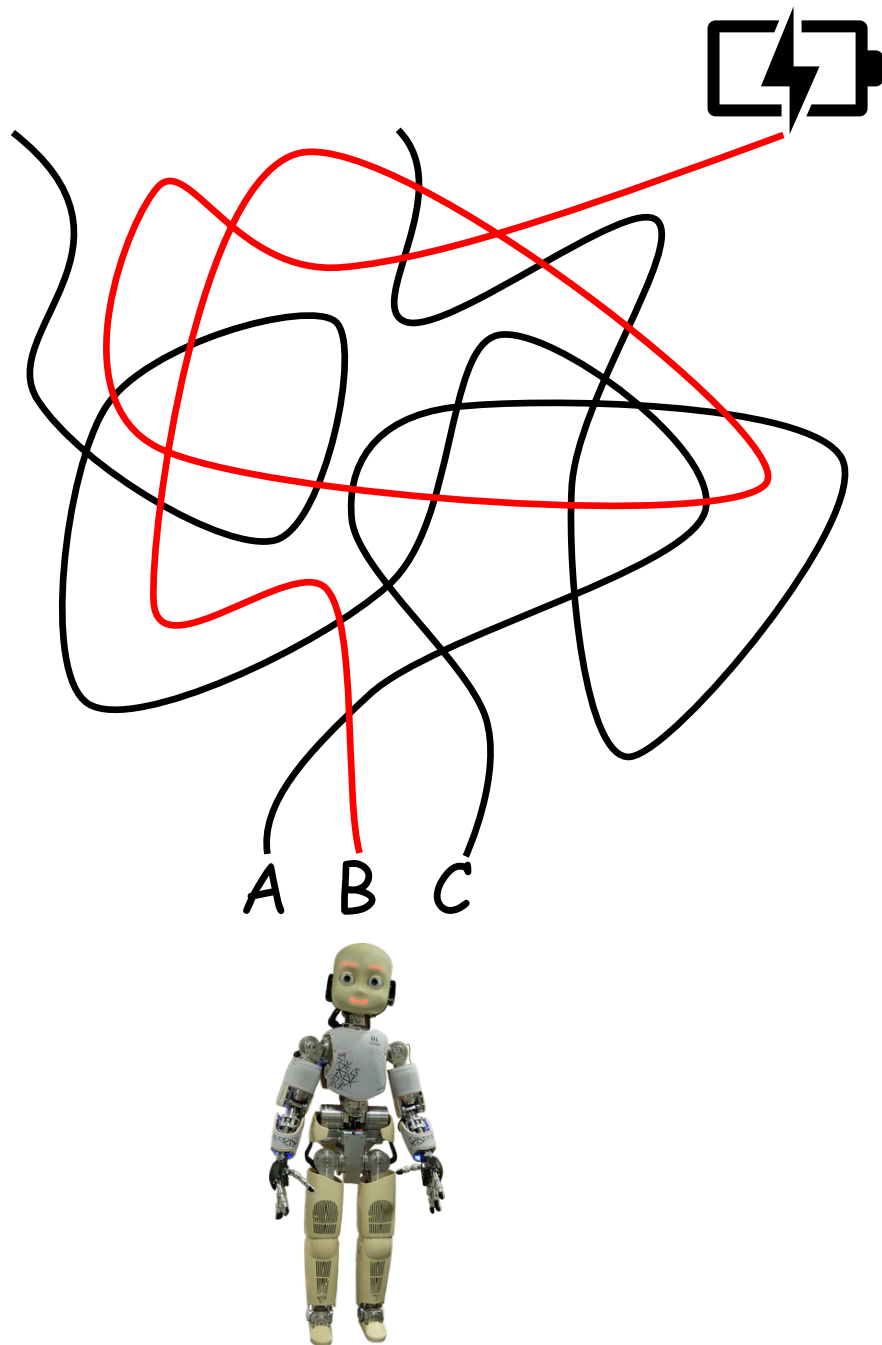
Answers

Word search

G	R	E	M	S	L	E	S	E	N	S	O	R	S
L	L	A	C	B	S	T	S	S	E	A	I	H	I
S	T	C	A	M	E	R	A	S	A	S	N	E	G
E	S	E	N	O	A	A	R	R	G	R	C	I	R
N	P	S	M	O	T	O	R	S	S	B	O	S	S
O	A	W	W	E	S	O	E	A	G	A	O	R	B
H	R	S	W	T	R	M	I	B	C	T	S	R	O
P	A	I	H	O	I	A	L	W	L	T	C	H	N
O	E	O	E	B	R	E	P	S	R	E	H	O	E
R	S	S	E	O	S	H	E	O	O	R	I	R	I
C	L	E	L	R	O	G	B	S	O	I	E	H	C
I	T	L	S	A	O	A	T	O	O	E	E	I	R
M	H	R	L	I	G	H	T	S	S	S	S	R	S
C	S	G	E	L	G	L	H	E	L	A	S	E	R

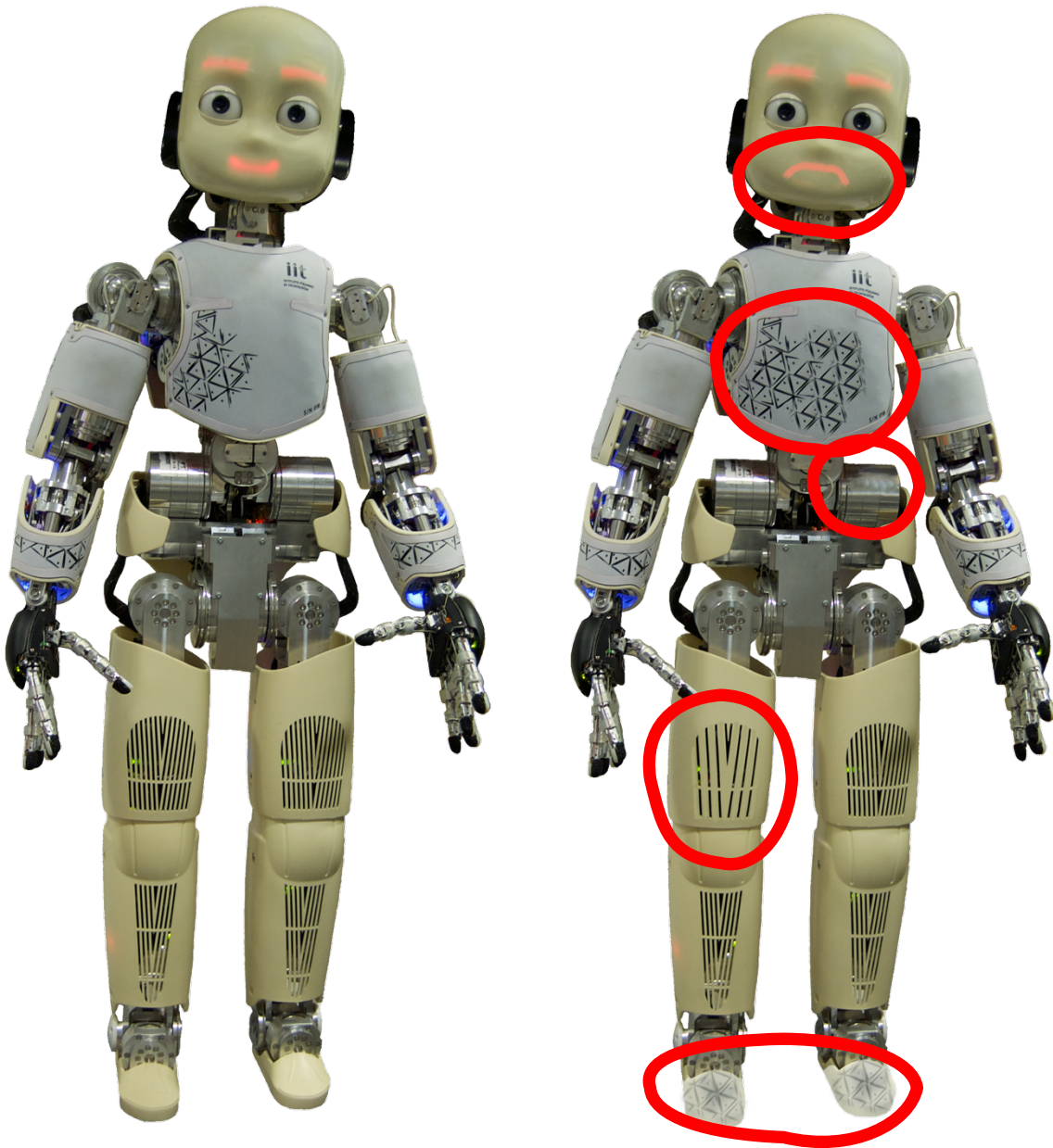
Made using <https://thewordsearch.com/maker/>

Connect the iCub robot to the power supply
Cable B will connect the iCub to the power.

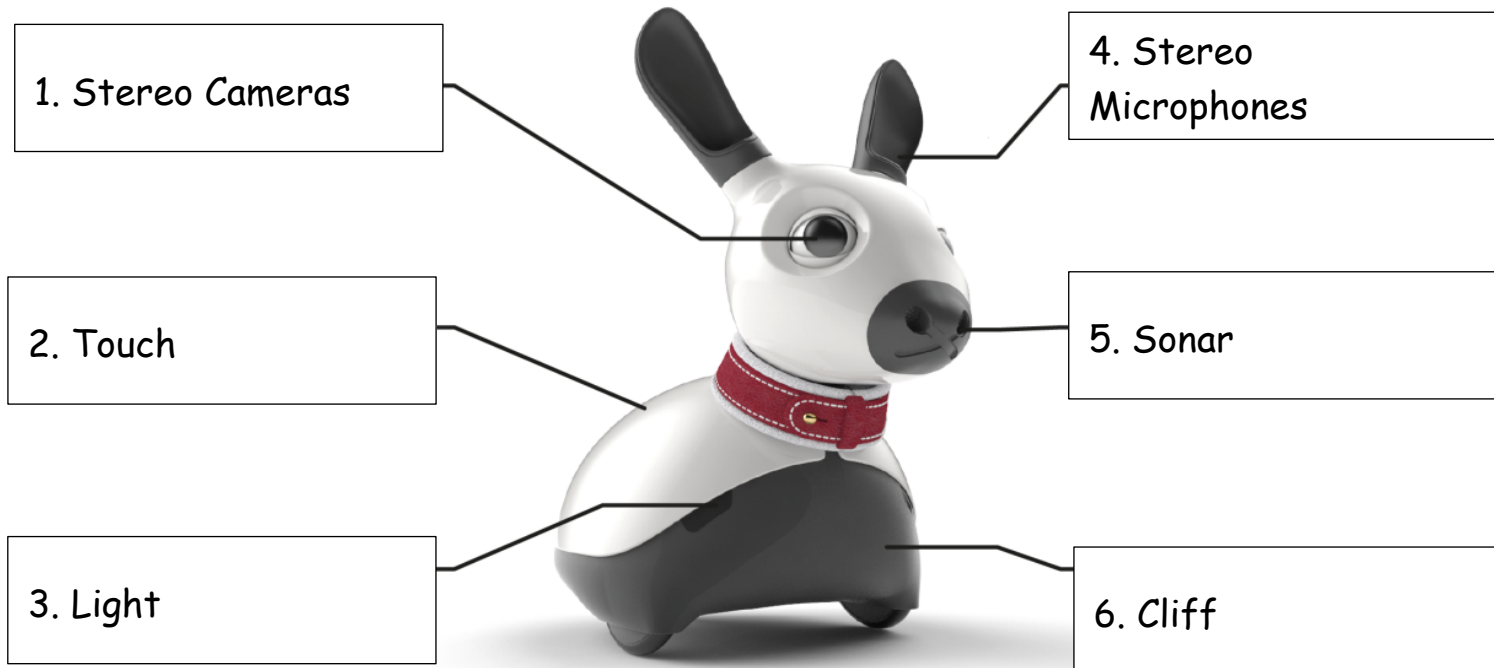


Spot the difference

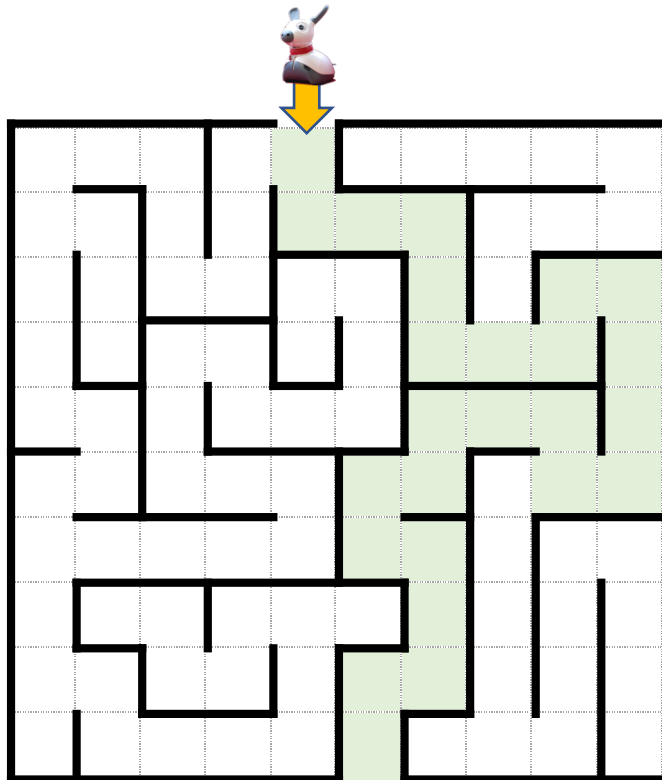
There are 5 differences between the two iCubs below. Can you spot them all?



Label up the sensors on MiRo



Navigate the maze



- | | | |
|----------------|----------------|----------------|
| 1. Forward 2 | 12. Turn Right | 23. Forward 1 |
| 2. Turn Left | 13. Forward 3 | 24. Turn Left |
| 3. Forward 2 | 14. Turn Right | 25. Forward 1 |
| 4. Turn Right | 15. Forward 1 | 26. Turn Left |
| 5. Forward 2 | 16. Turn Right | 27. Forward 1 |
| 6. Turn Left | 17. Forward 1 | 28. Turn Right |
| 7. Forward 2 | 18. Turn Left | 29. Forward 2 |
| 8. Turn Left | 19. Forward 2 | 30. Turn Right |
| 9. Forward 1 | 20. Turn Left | 31. Forward 1 |
| 10. Turn Right | 21. Forward 1 | 32. Turn Left |
| 11. Forward 1 | 22. Turn Right | 33. Forward 2 |

Maze generated using <http://www.mazegenerator.net>

Pair up sensors

Types of Sensors

Ultrasonic (sonar)

Light sensors

Camera

Microphone

Thermal camera

Touch sensor

Cliff sensor

Lidar (laser)

What it Does

This detects contact. It could be a button or like the screen on a smart device.

Sends out sound to detect objects by listening to the echoes as the sound bounces off it.

A video camera that 'sees' heat allowing it to operate in the dark or locate heat sources.

Measures the light level around the robot. Can be used to guide the robot towards a light or away from it.

Placed under moving robots, they use infrared light to check for drops or steps in the floor to stop the robot from falling off ledges.

A video camera capturing colour images of the environment in front of the robot. This is useful to recognise and avoid objects as necessary.

Sends out beams of infrared light and measures how long they take to bounce back. This allows robots to spot objects in front of them and how far away they are.

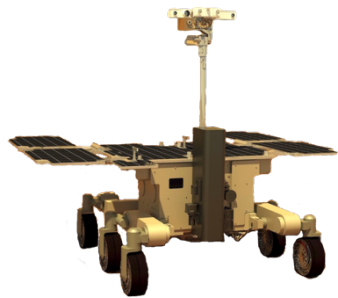
Listens to sounds around the robot. With more than one they can even locate the direction of the sound.

Robots and descriptions.



Idris

I'm an autonomous drone capable of flying long distances and taking arial photographs to survey changing landscapes.



ExoMars

I want to explore other planets. I'm destined to seek out life on Mars using special cameras and my drilling arm.



X8

I'm the size of a car and can drive off-road. I can autonomously follow a dirt track, surveying my surroundings as I go.



Afanc

I'm designed to work safely alongside people using my grippers to manipulate objects.



Yumi

I'm at home in the sea, using my sonar and special underwater camera to study marine environments