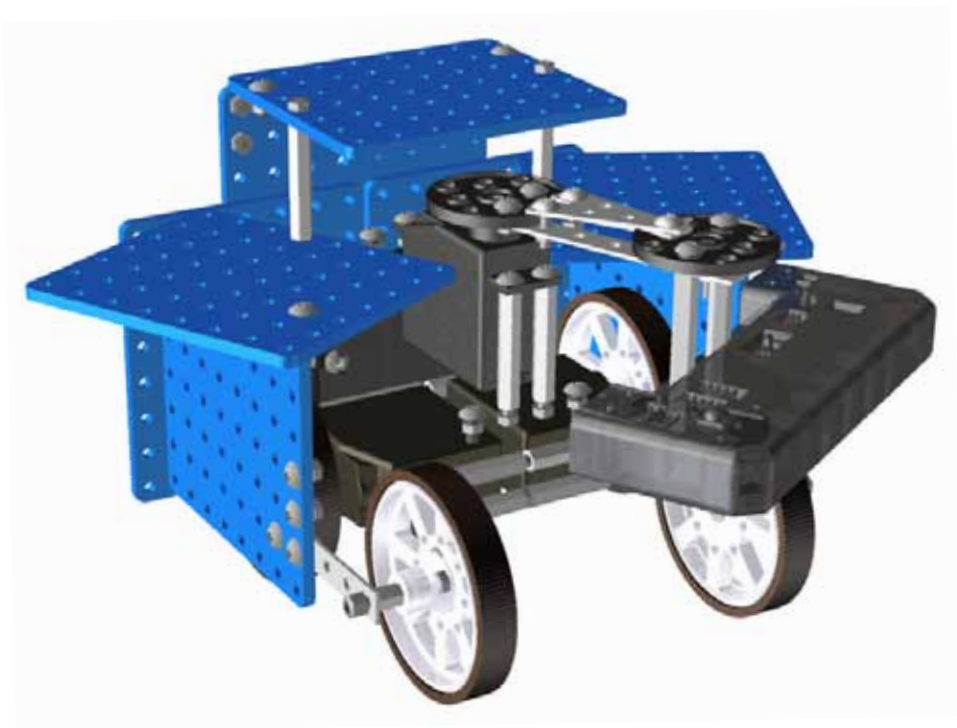
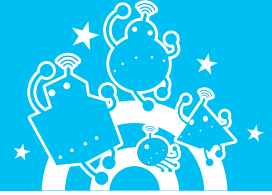


5. Obstacle Mission Robot



Introduction and working principle

– Driving Scenario



Obstacle Mission Robot is a robot being able to move around in an unknown environment while not colliding with surrounding objects. Its design is focused on the function of efficient detection and performance, faithfully based on obstacle avoidance task. Use of servo motors enables wider angles of sensor movements, even to the extent of 90 degrees both to left and right, allowing high-end detection capability with no blind spots for robot. Many effective applications can be available with use of just a few sensors in this way.

Robot is able to activate in details upon setting-up of orders of commands and their flows in overall scale. Orders of commands and their flows are specified in the format of sequential flow, flow chart or driving scenario.

Driving scenario for the updated obstacle Mission robot is as follows:

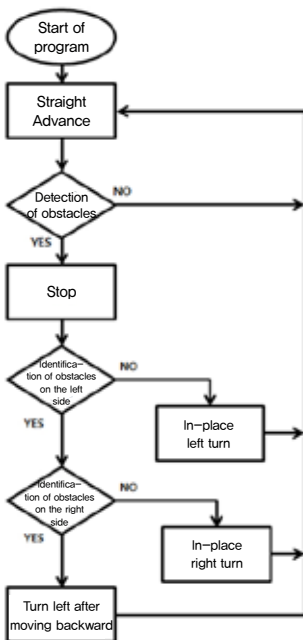
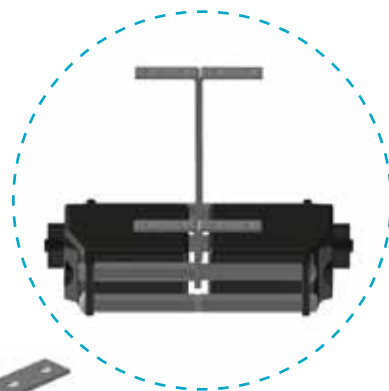
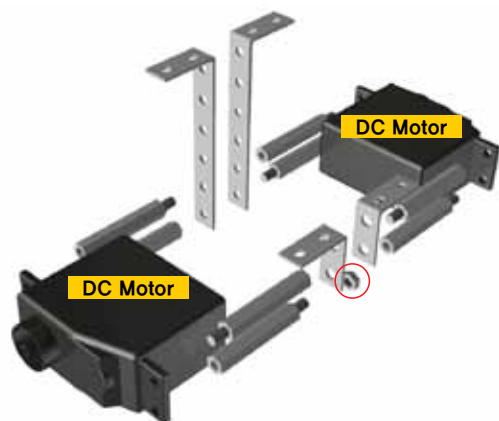


Figure 1. Driving Scenario

1. Start advancing.
2. Keep identifying the sensors in front while continuously advancing, and determine whether there are obstacles or not.
3. Keep advancing if no obstacle has been detected.
4. If obstacles are detected, make a stop. (the criterion for obstacle detection is when 8cm in size is detected)
5. After a stop, rotate sensors to the left side and identify whether there is any obstacle.
6. If no obstacle is identified to the left side, turn to the left. Then, return the head to the front, go back to **No. 1** and advance.
7. If obstacles have been identified on the left, turn the head to the right and identify whether there are obstacles or not.
8. If no obstacles have been identified, make a right turn, return the head to the front, go back to **No. 1** and advance.
9. If obstacles have also been identified to the right side, drive the robot backward as far as it is specified. And then make a left turn, go back to **No. 1** and advance.

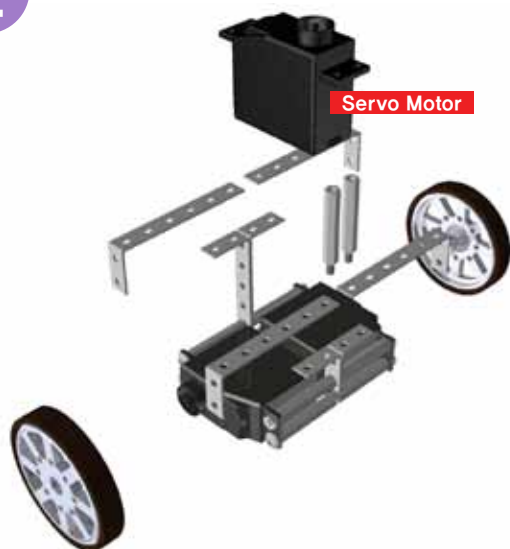
1



30mm X 8



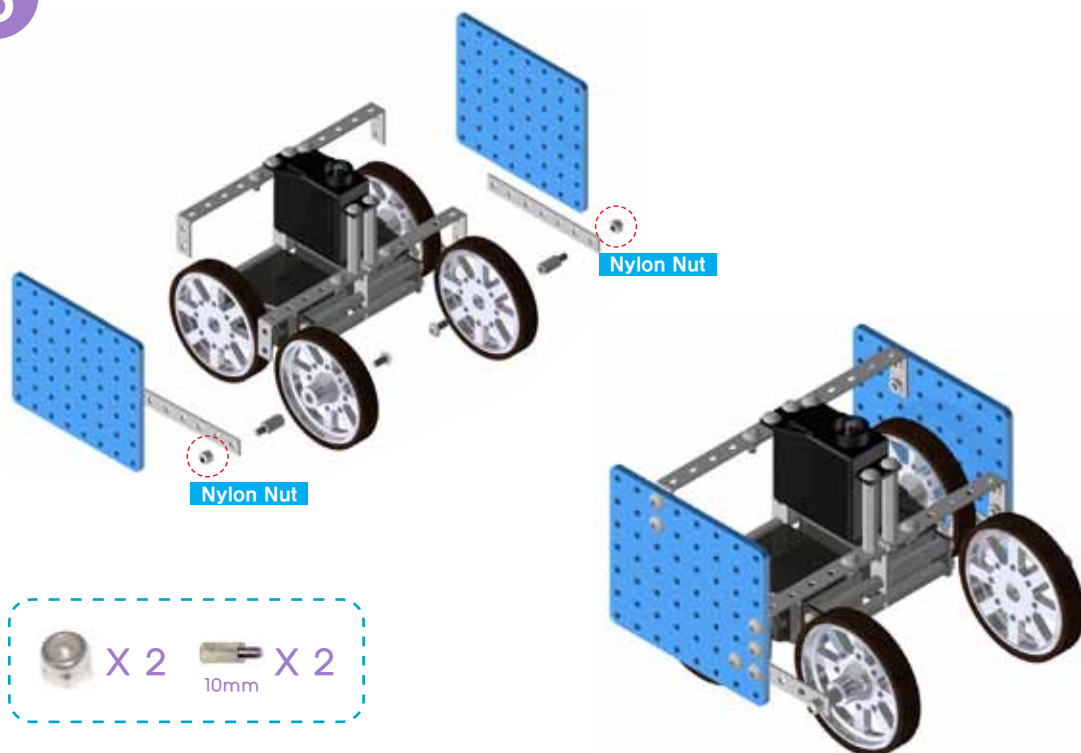
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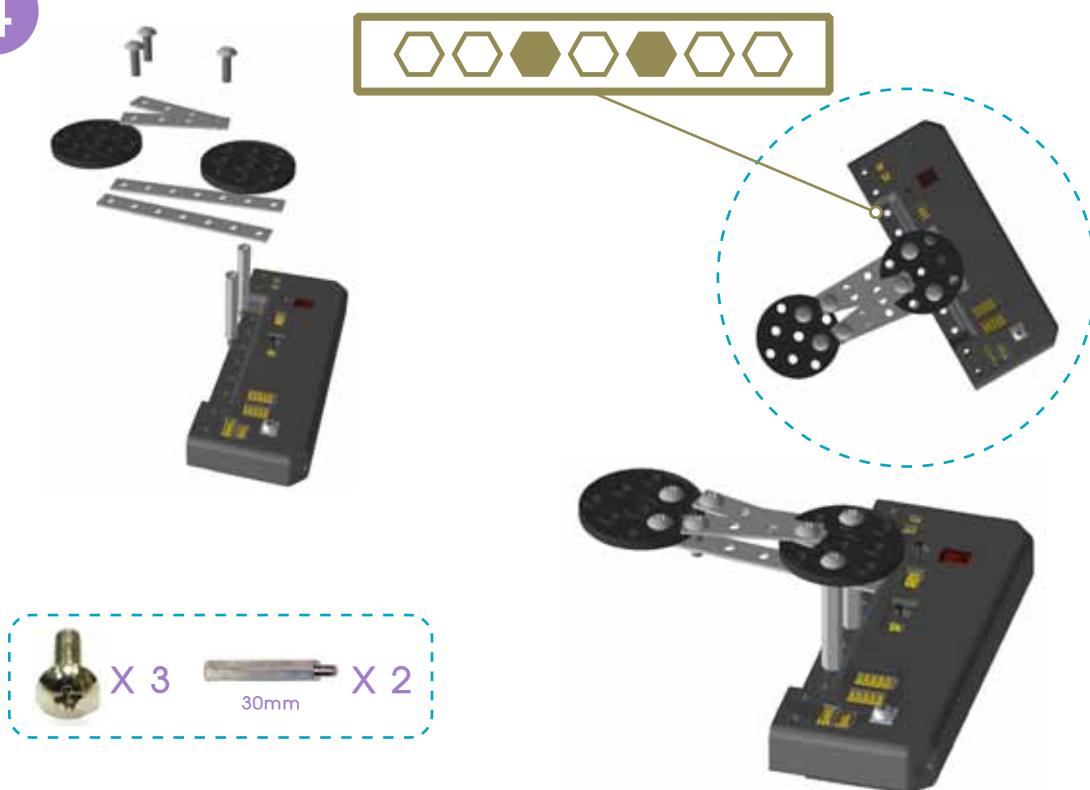
X 2 30mm X 2



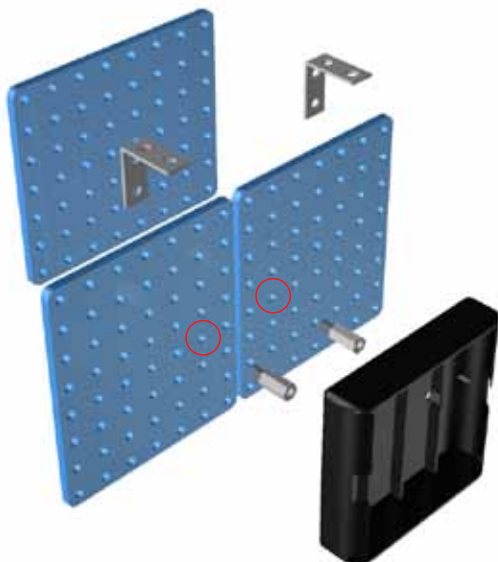
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4



5

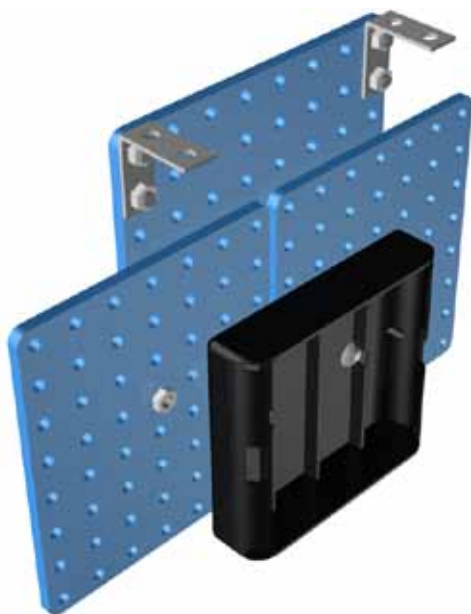
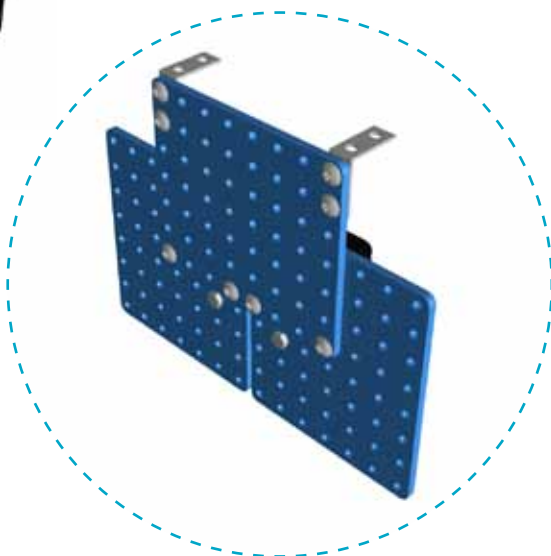


X 2

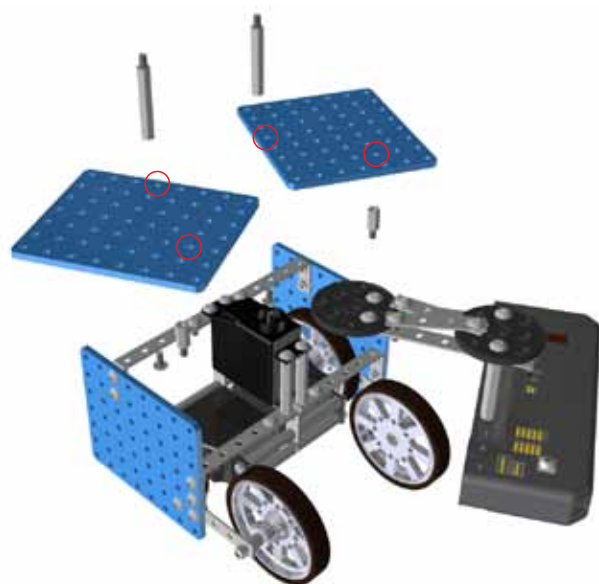


10mm

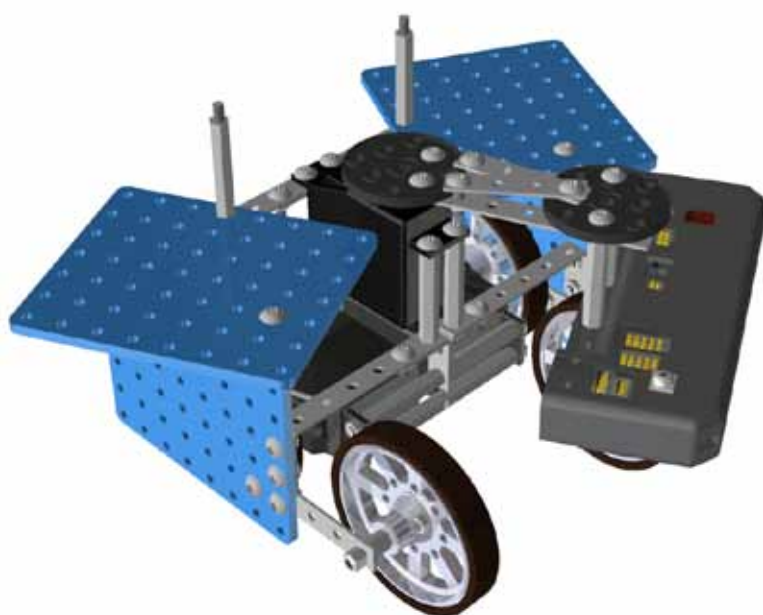
X 2

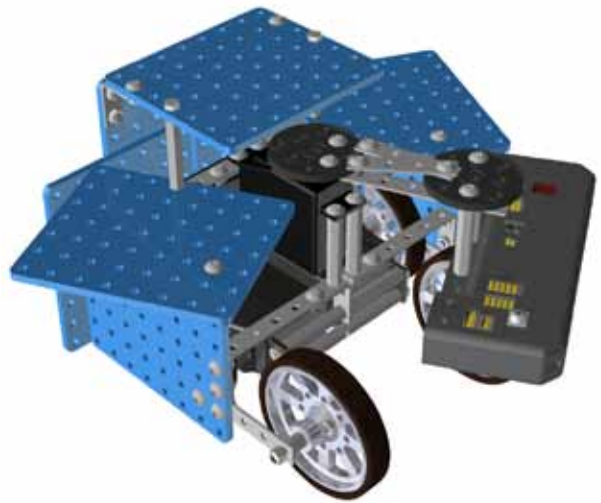
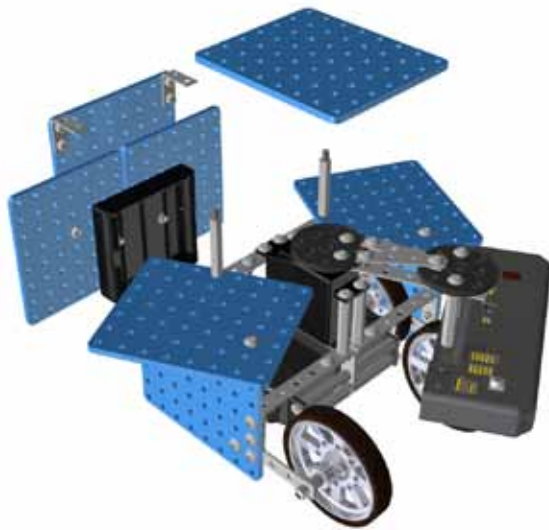


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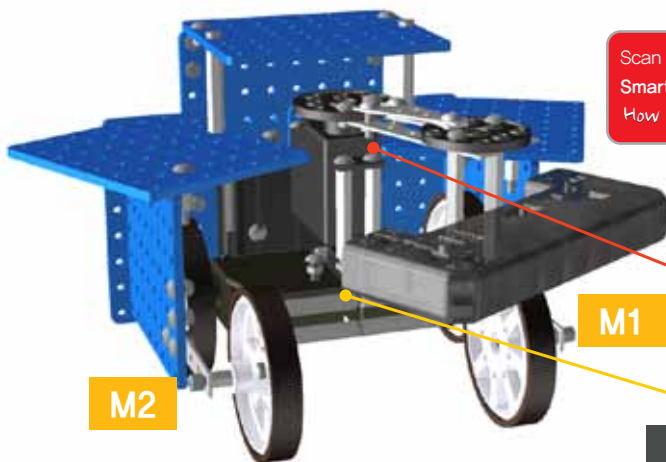


30mm X 2 10mm X 2





S1



Scan the QR code with your
Smart phone, and watch
How the robot is driven.



M1

M2

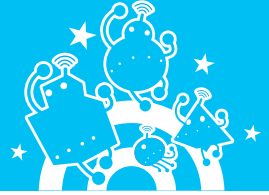
M1

M2

S1

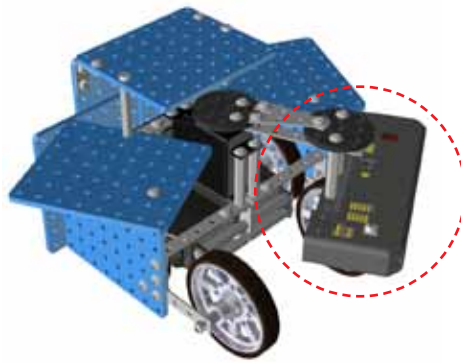


Acting Module

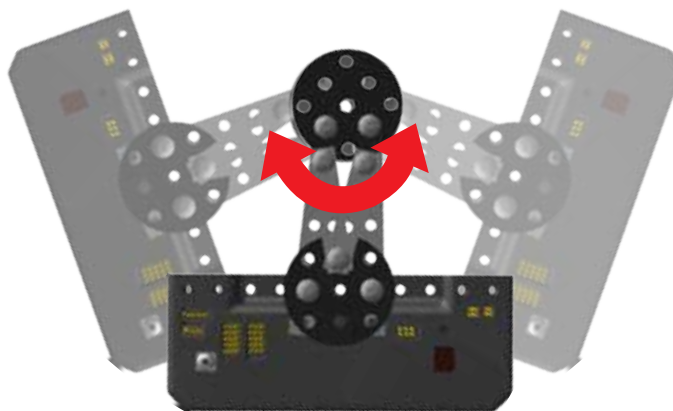


For driving Obstacle Mission Robot, select and press program mode 5.

Obstacle Mission Robot uses the sensors installed in front of the smart controller in order to detect obstacles.



Robot is enabled to attempt a wide angle of detection coverage with the help of servo motor—rotating fixed sensor.



Play the Game!

– Obstacle Mission Robot



Requirements :

- an arena (1.5m in width and 1m in length, surrounded with 5cm or higher wall)
 - a variety of objects to be used as obstacles (objects which are over 10cm in height, non-black colored and as varied as can, are most welcomed)
1. Divide players into a pair of teams; maze-creating team and maze-solving team.
 2. Fix the start point and finish point, and form an arena, leaving all other areas empty.
 3. Maze-making team makes a maze during 2 minutes of permitted time by making use of obstacles.
 4. Maze-solving team solves the maze created by maze-making team. Record the time spent in solving the maze.
 5. Switch each other's role and execute it. Who has solved the maze faster wins the game.
 6. In case a maze is made too narrow or blind, unable to be solved (alley or cul-de-sac), the maze-making team lose the game.

