

# 1. Bike Robot



# Introduction and working principle



Bike robot is steered by front wheels, driven by rear wheels, and accordingly structured in a similar way to rear-wheel drive vehicle. Differently, a motorcycle is able to lean its body forward and able to shift directions.

Generally, motorcycle is composed of two wheels like a bike and, when left standing without support, it tends to fall to a side. However, when moving forward, it comes not to fall. It is because of inertia, the tendency of bike to keep moving in a straight line and to keep maintaining current position when moving forward. If wheels keep rotating, it is not apt to easily fall.

Three wheels are employed to make a bike robot. What is the reason? When two wheels are aligned, the center of gravity is concentrated at the center of the two, as in the line segment connecting two dots. The center of gravity of a two-wheel bike corresponds to that of the line segment connecting two dots. Yet, it comes to fall as balance is uneasy to be maintained.

When three wheels are aligned together, each wheel acts as dot in a line segment, forming a triangle with an area. The area of a triangle thus given allows the center of gravity to be stabilized, as if balance is well maintained on a tripod.

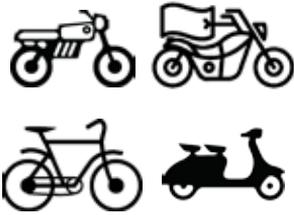
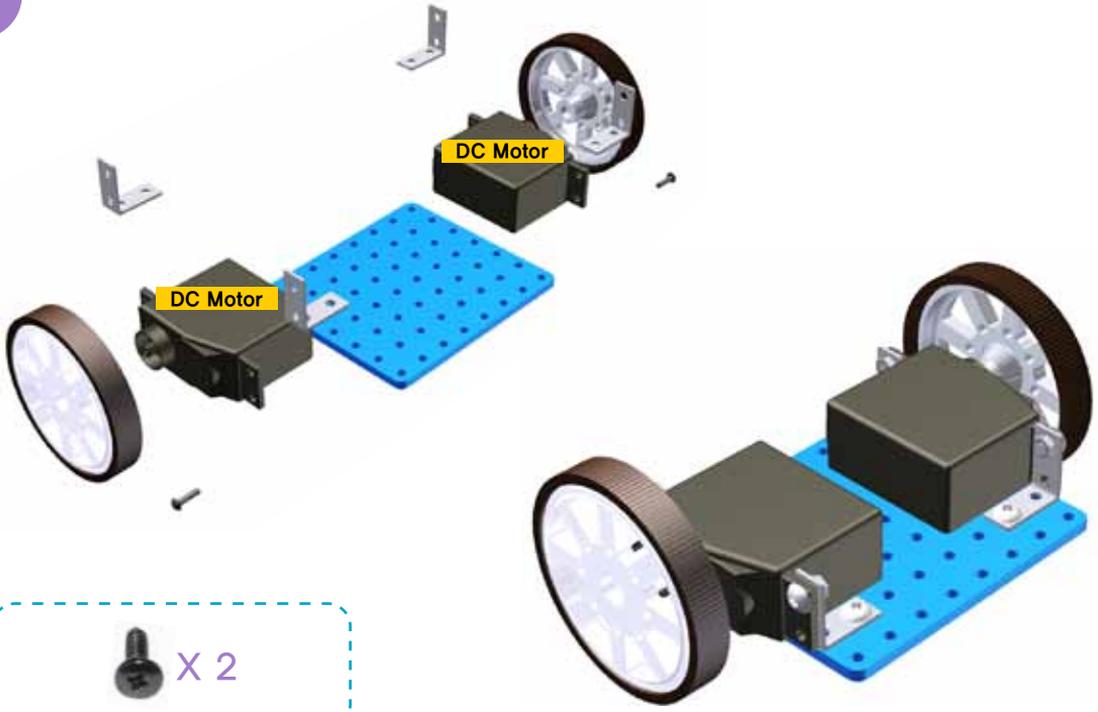


Figure 1. Types of Bikes

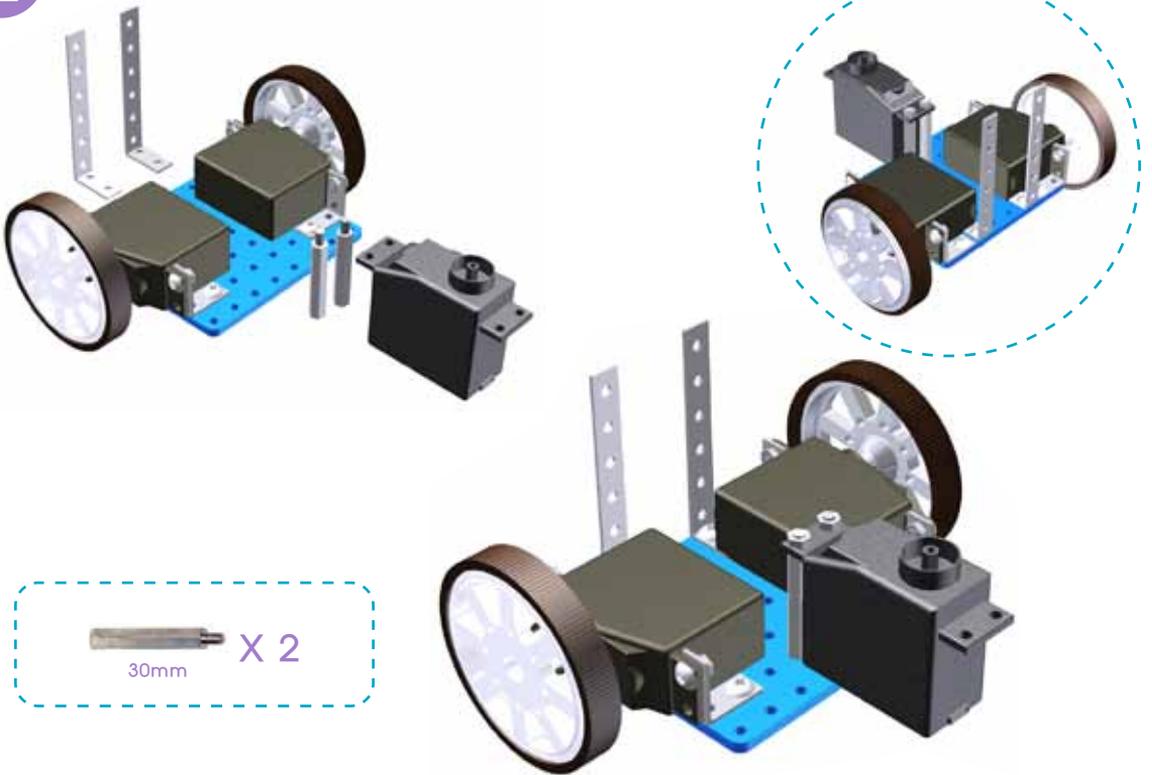


Figure 2. Three-legged Chair

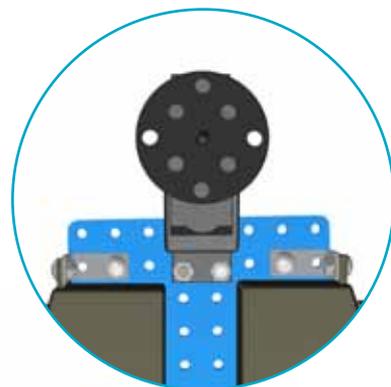
1



2



3



4



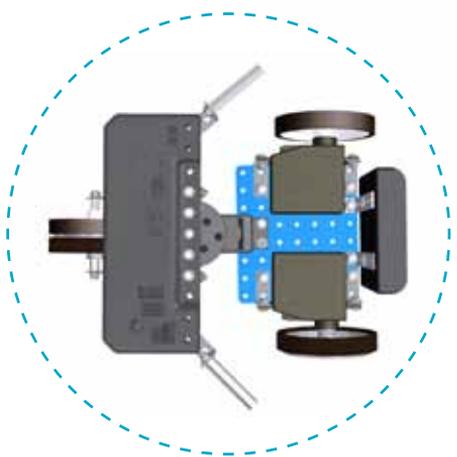
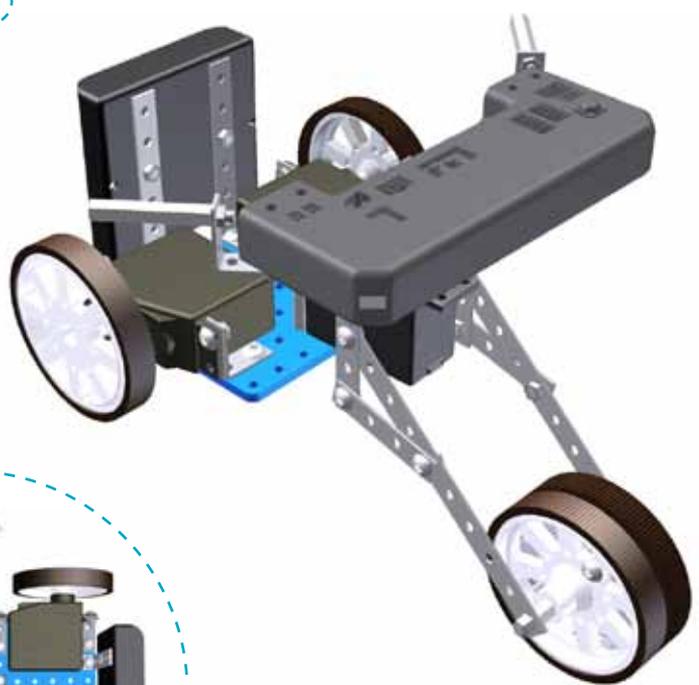
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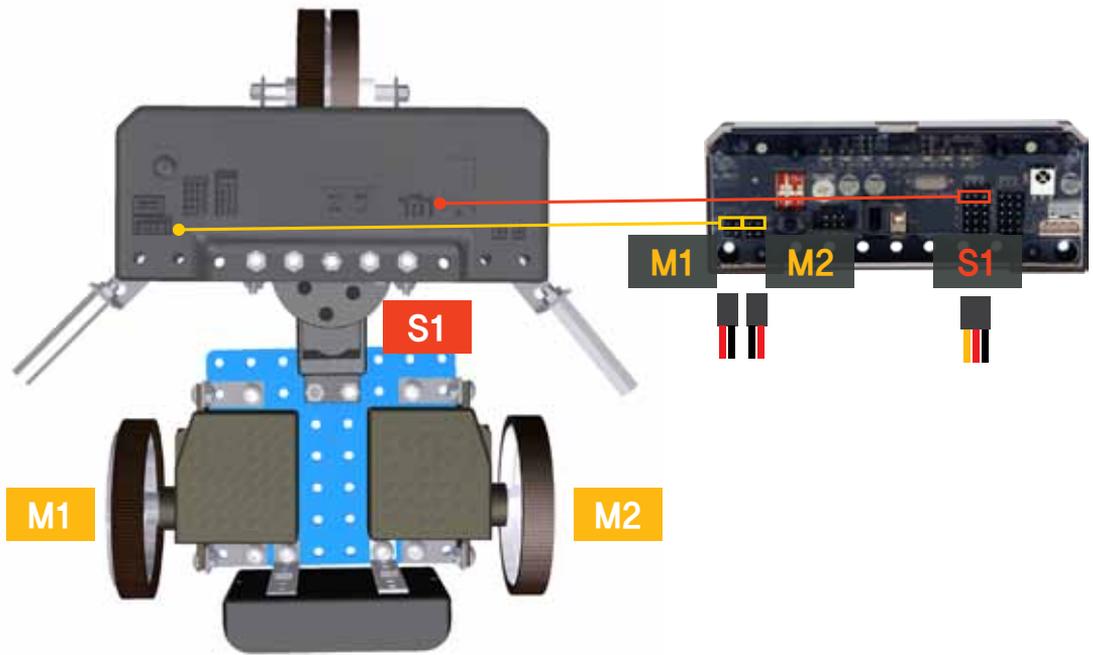


6



7





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



ROBO LINK

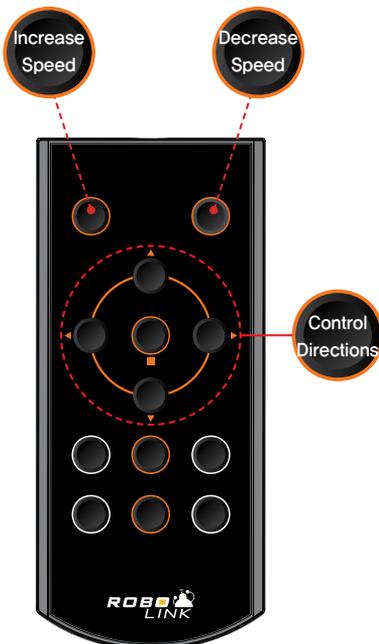
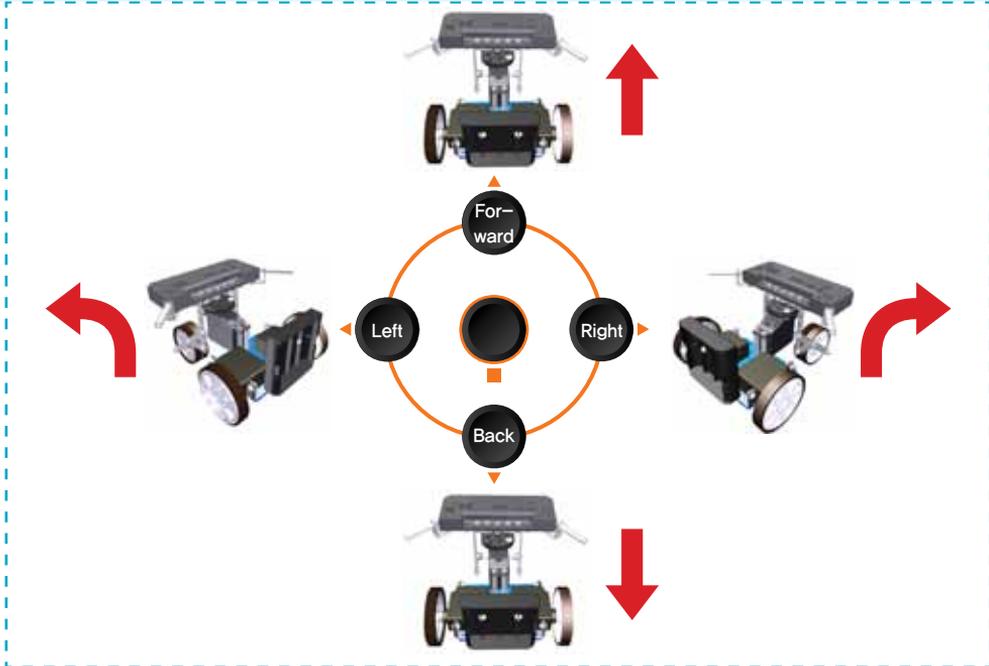
# Acting Module



For driving Bike Robot, select and press program mode 1.



In Smart Rokit Step 2, program is due to be running on with number 2 toggle of DIP switch turned upward. In other words, Smart Rokit Step 2 basically uses channel number 3. Refer to '2. Channel set-up for remote control' in page number 15 that gives you more in details for further reference.



When the speed increases, a brightness of the light increases.



When speed is high



When speed is low



# Play the Game!

**Requirements : different forms of obstacles over 10cm in length  
(objects in pillar or conic forms preferred rather than in flat forms)**

1. Fix 'START' Point and 'FINISH' Point, place the obstacles on a line in-between the Points, and arrange them to form an arena.
2. Measure the time period of each player spent on running from 'Starting Point' and back to 'Finish Point'. Who has recorded shortest time period wins the game.
3. Players must drive their Bike Robots circumventing the obstacles in-between. Obstacles must not be passed over or fallen down. In both cases, the player gets disqualified and should start it over from scratch.
4. When the obstacle outnumbers, you may frame another arena for additional competition. Equally, who arrives at the Finish Point faster wins it.

