

ENJOY AI 2024
INTERSTELLAR JOURNEY

CLOSING CEREMONY OF SPORTS

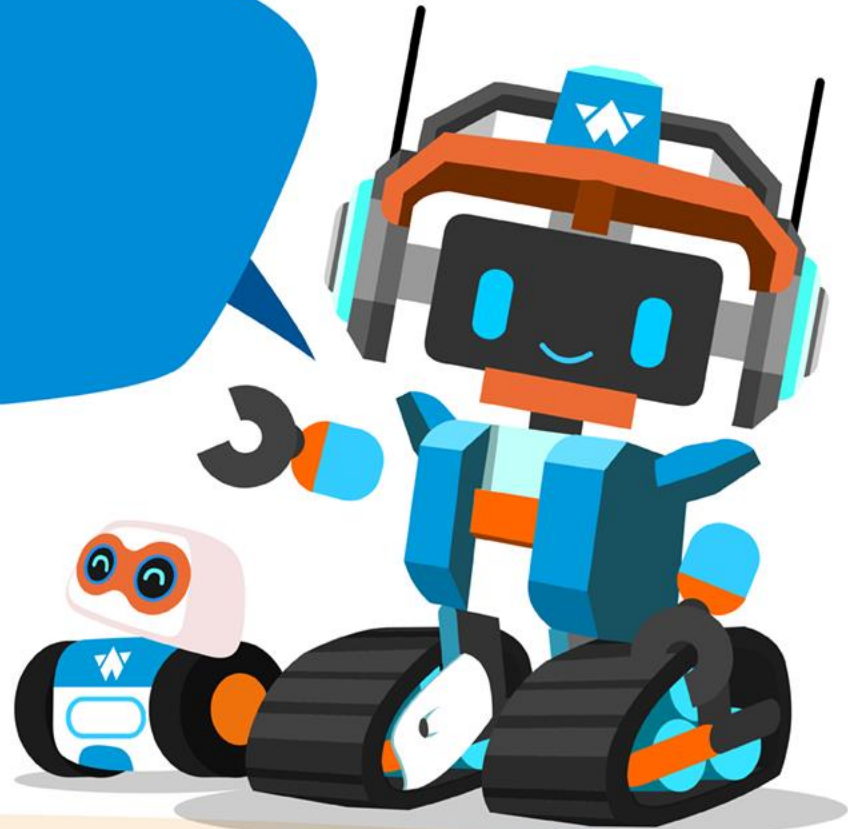


Task Analysis (Part 5)

Objectives:

1. In-depth analysis of task requirements and scoring rules
2. Design solutions
3. Write programs to finish the tasks

5+



Review



After four lessons, we have completed most of the tasks. Let's take a look at the final task together!



Review

1. In the previous lesson, what problems did we meet when doing tasks?
2. What factors should we consider when designing solutions for the “Torch Dousing” task?

Challenges



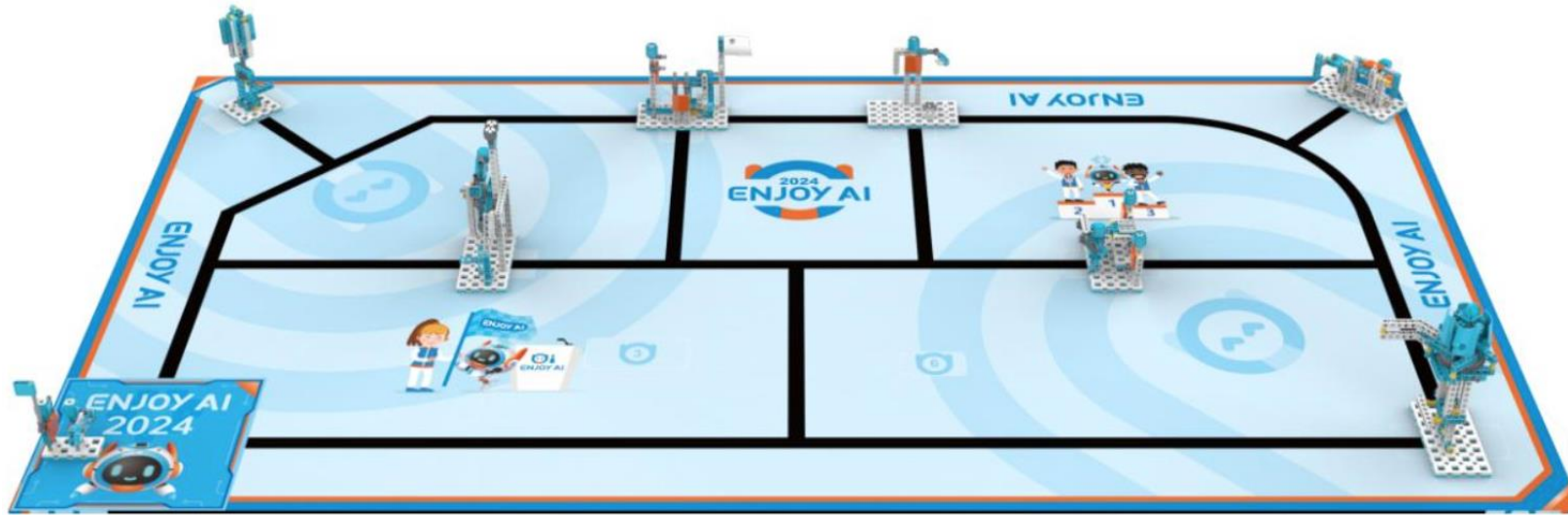
Challenges



Hi guys, let's move to the final task!



Challenges



To watch detailed rule analysis, go to
<https://www.youtube.com/watch?v=oitiXwSqGBM>

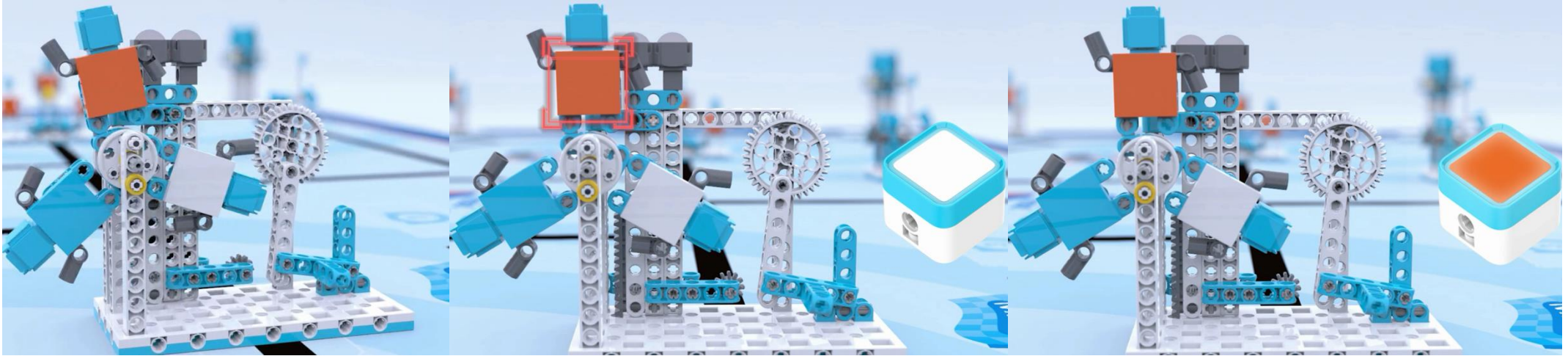
To watch a demo, go to
<https://www.youtube.com/watch?v=jn6KJHc9a2E>



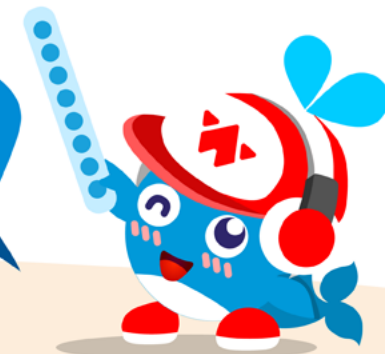
Task Analysis: 8-minute Showcase



Challenges



The robot needs to move the toggle first to make the performer rotate around the pulley. After the rotation stops, the color sensor identifies the clothing color of the highest performer, and then the indicator light shows the corresponding color for 2 seconds.

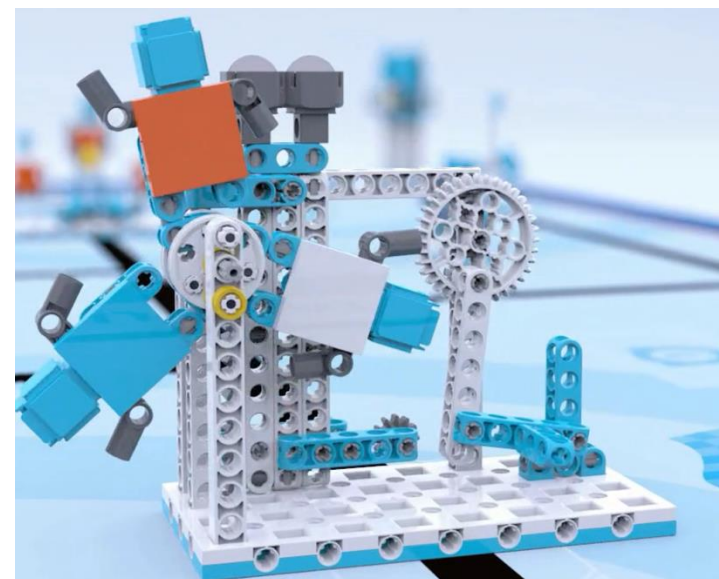


Challenges



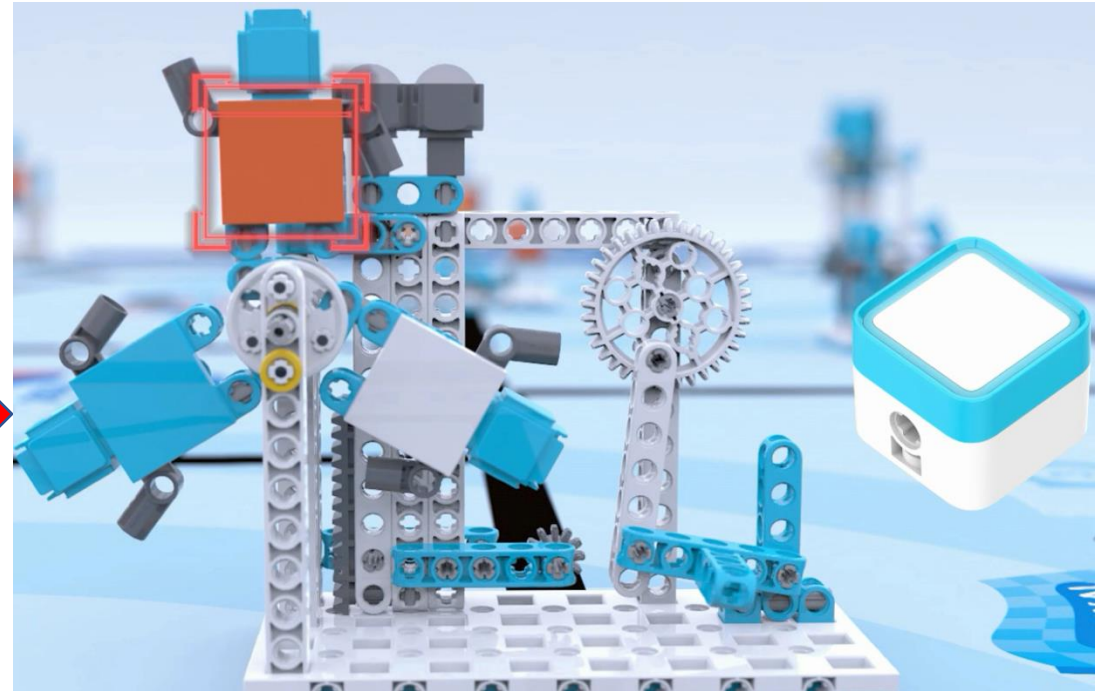
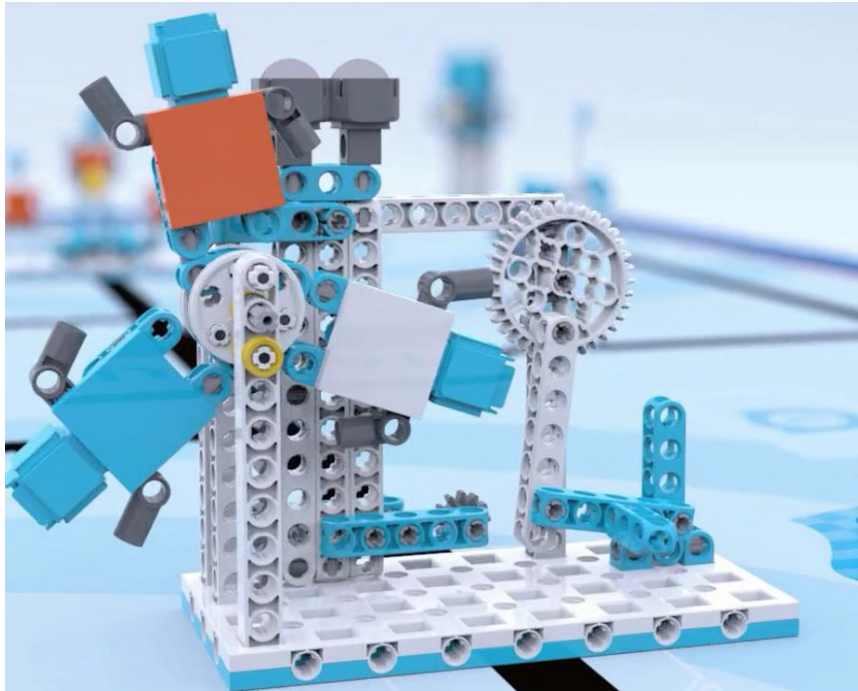
Everyone, before we start practicing this task, let's learn how to win points in this task!

Challenges



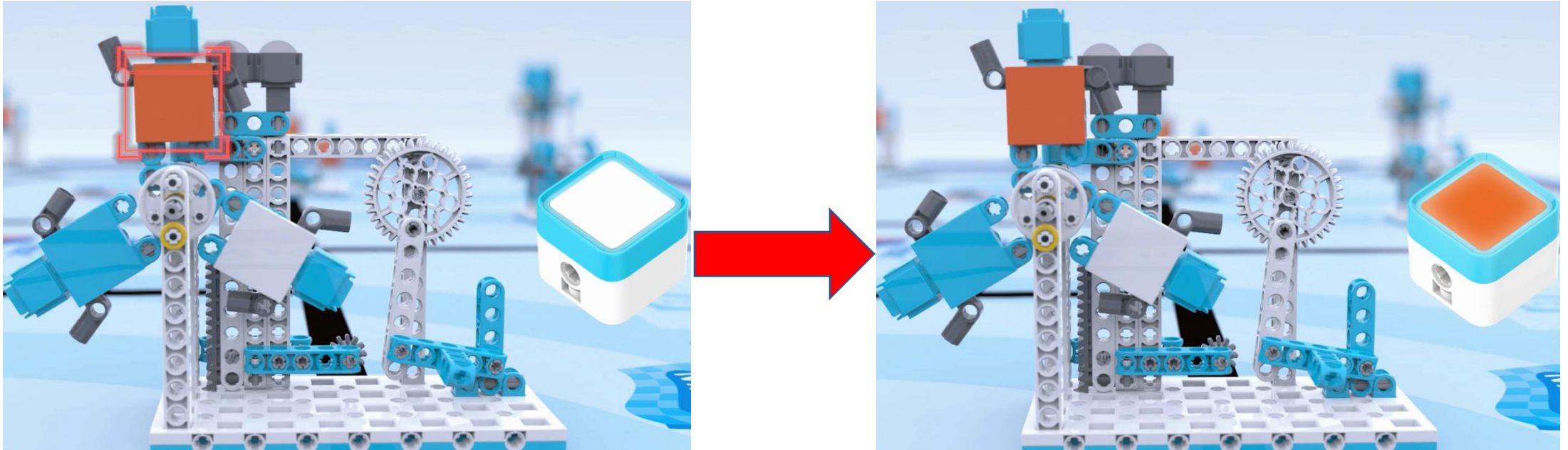
1. Rotate the performer through the toggle.

Challenges



2. Wait for the end of the performance, identify the clothing color of the performer on the top, and display the color through the indicator light.

Challenges



3. The color that has just been successfully identified should be displayed on the indicator for at least 2 seconds.

Challenges



So, how can we build our robot? What parts do we need?

Challenges



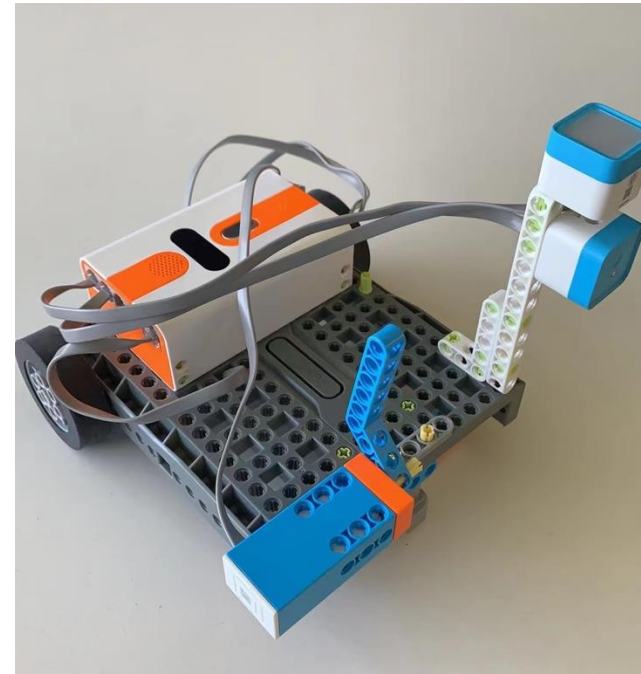
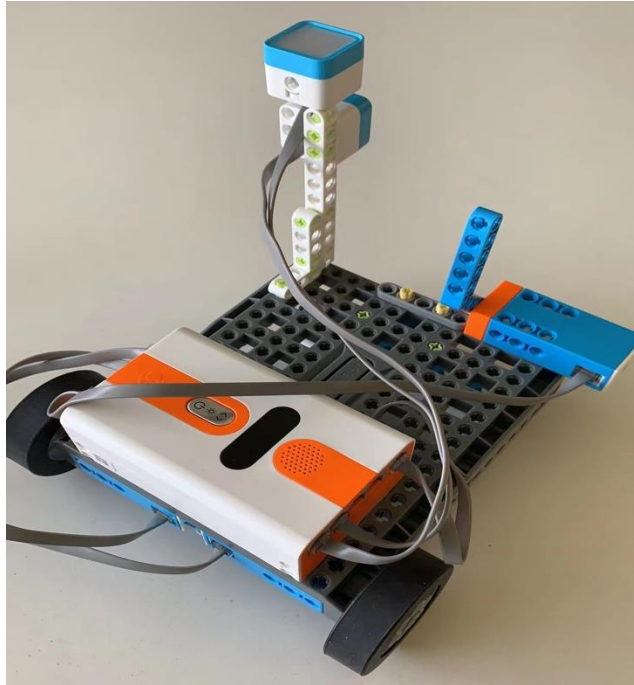
The robot must be able to do the following things:

1. Pull the toggle.
2. Wait for the rotation to stop and identify the clothing color of the performer.
3. Let the indicator light display color.

Try to design your robot!

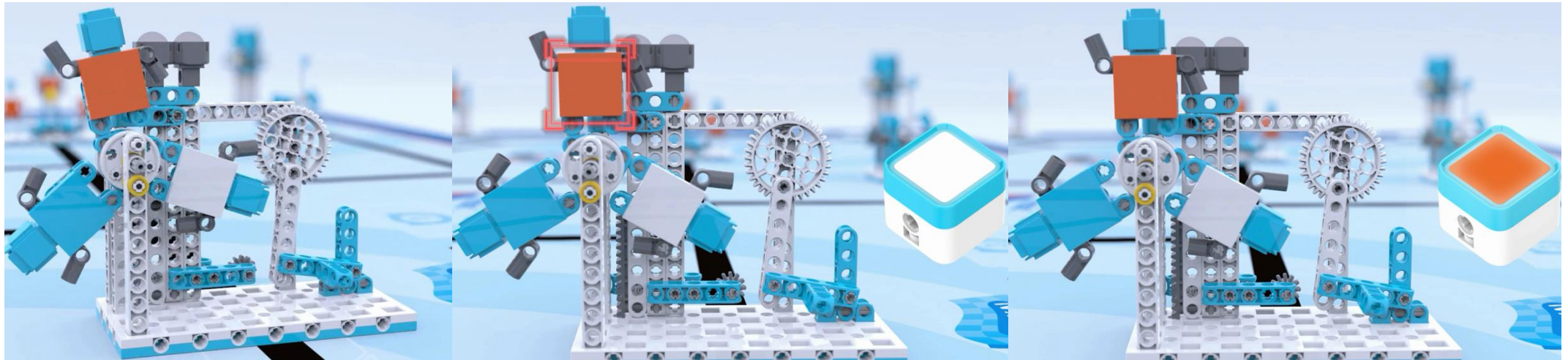


Challenges



Here's our solution. Let's install these parts and see what happens!

Challenges



Now, try to write a program to complete this task!

Challenges

The following video provides a demo of this task.



Challenges

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2024



Challenges

Set off

main

```
initialize left motor A 100 right motor B -100 integrated grayscale port 5
start motor left motor speed 20 right motor speed 20 time 0.5
patrol line intersections right patrol line speed 30 rush through intersection time 0.2
turn middle left motor speed 30 right motor speed -30
patrol line patrol line speed 20 for 1.25
wait 1 secs.
move left motor A right motor B Turn right power 10 % run for 0.25 secs.
wait 1 secs.
```

Challenges

Pull the toggle

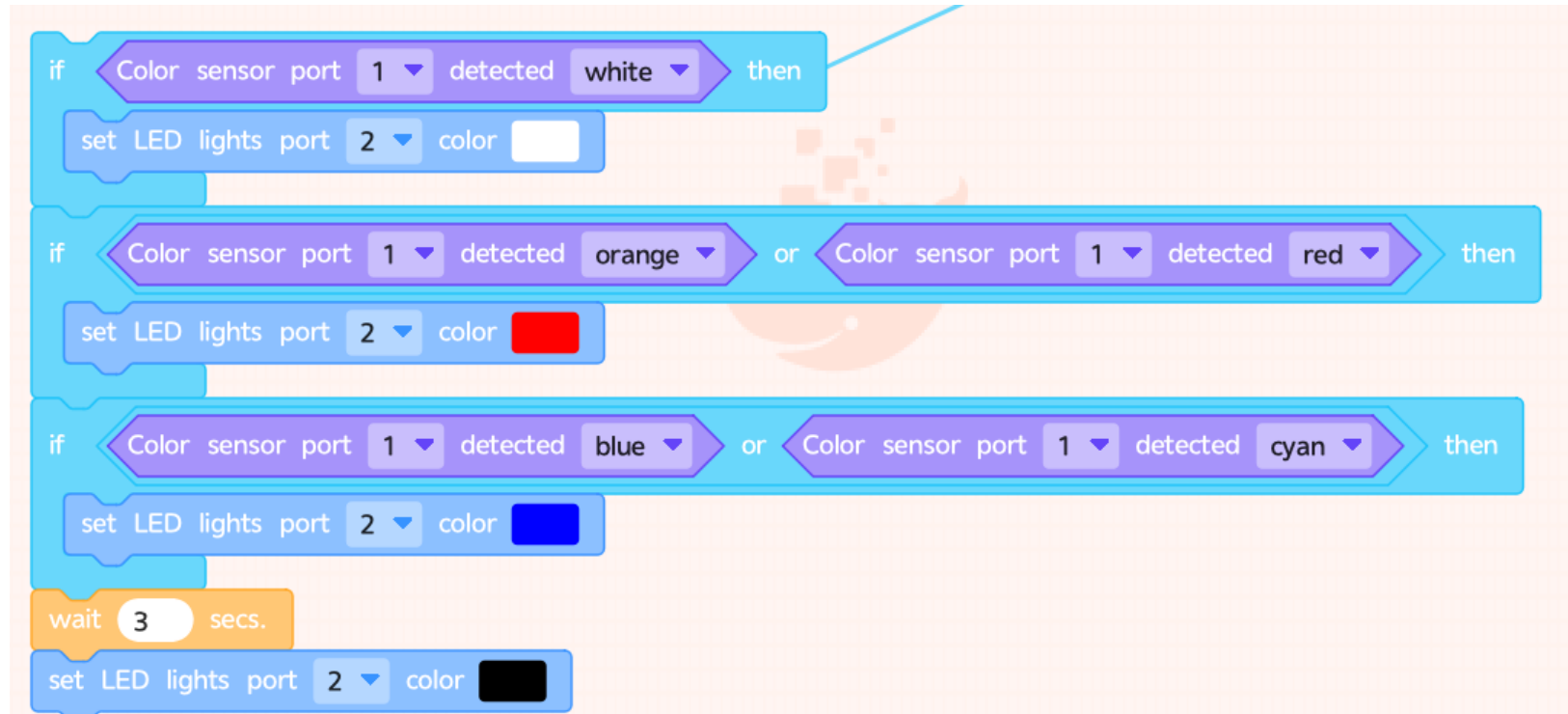


The image shows a Scratch script for a character named 'Whales Bot'. The script consists of several blocks: a 'set motor' block for motor D with power -30 running for 0.4 seconds, followed by a 'wait' block for 0.5 seconds. Then, a 'move' block for left motor A and right motor B in 'Backward' direction with power 10 running for 0.2 seconds, followed by another 'wait' block for 0.5 seconds. Next, a 'set motor' block for motor D with power 30 running for 0.2 seconds, followed by a 'wait' block for 0.5 seconds. Then, a 'move' block for left motor A and right motor B in 'Turn left' direction with power 10 running for 0.15 seconds, followed by a 'wait' block for 0.5 seconds. Finally, a 'move' block for left motor A and right motor B in 'Forward' direction with power 10 running for 0.25 seconds, followed by a 'wait' block for 3 seconds. The background of the script area features a faint illustration of a whale and the text 'Whales Bot'.

```
set motor D ▾ power -30 % run for 0.4 secs.  
wait 0.5 secs.  
move left motor A ▾ right motor B ▾ Backward ▾ power 10 % run for 0.2 secs.  
wait 0.5 secs.  
set motor D ▾ power 30 % run for 0.2 secs.  
wait 0.5 secs.  
move left motor A ▾ right motor B ▾ Turn left ▾ power 10 % run for 0.15 secs.  
wait 0.5 secs.  
move left motor A ▾ right motor B ▾ Forward ▾ power 10 % run for 0.25 secs.  
wait 3 secs.
```

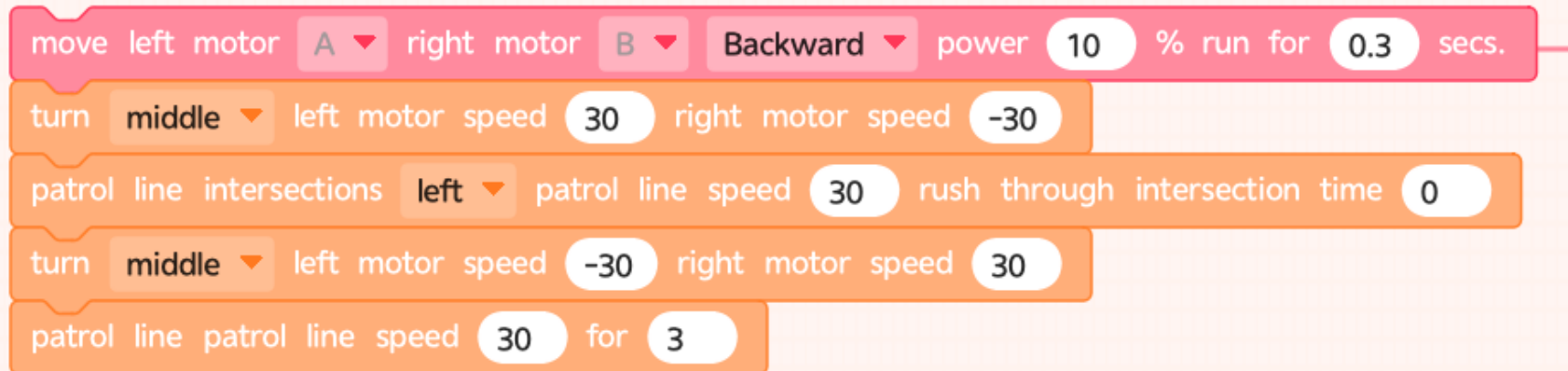

Challenges

Recognize clothing color



Challenges

Light off and return to base



```
move left motor A right motor B Backward power 10 % run for 0.3 secs.  
turn middle left motor speed 30 right motor speed -30  
patrol line intersections left patrol line speed 30 rush through intersection time 0  
turn middle left motor speed -30 right motor speed 30  
patrol line patrol line speed 30 for 3
```

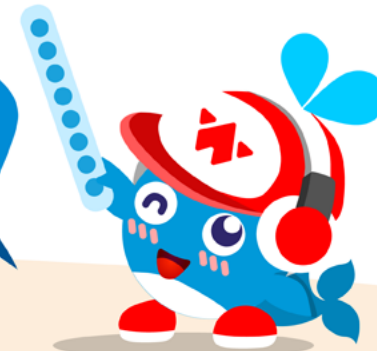
The image shows a sequence of five Scratch code blocks. The first block is pink and contains the text 'move left motor A right motor B Backward power 10 % run for 0.3 secs.'. The remaining four blocks are orange. The second block is 'turn middle left motor speed 30 right motor speed -30'. The third block is 'patrol line intersections left patrol line speed 30 rush through intersection time 0'. The fourth block is 'turn middle left motor speed -30 right motor speed 30'. The fifth block is 'patrol line patrol line speed 30 for 3'.

Challenges

Challenges accepted!



Great! You've finished the task today. Let's spend the rest of the time practicing the task and see if we can finish it more quickly!



Let's try to finish the task and then let the robot return to the base!



See you next time!

