Learning Series

Throwing robot



This robotics kit is a building block programming robot developed by Joinmax. The kit is equipped with various sensors such as sound sensitivity, color, touch, photoelectric, lantern, ultrasonic, camera and a wealth of building blocks. Students can use their imagination to build a variety of building block robots, and use graphical programming software to program the robot and experience the joy of hands-on creation.

Learning Target

01

Knowledge goal

Understand the characteristics of the car and practice programming for the task.

02

Ability goal

The angular range of the servo motor is selected.

03

Emotional attitudes and values

Understand the use of power and intuitively feel the charm of mechanical development.

Learning Target

01

Learning focus

Master servo motor zeroing and angle adjustment.

02

Learning difficulties

Strengthen the relationship between the selection of the working range of the servo motor.

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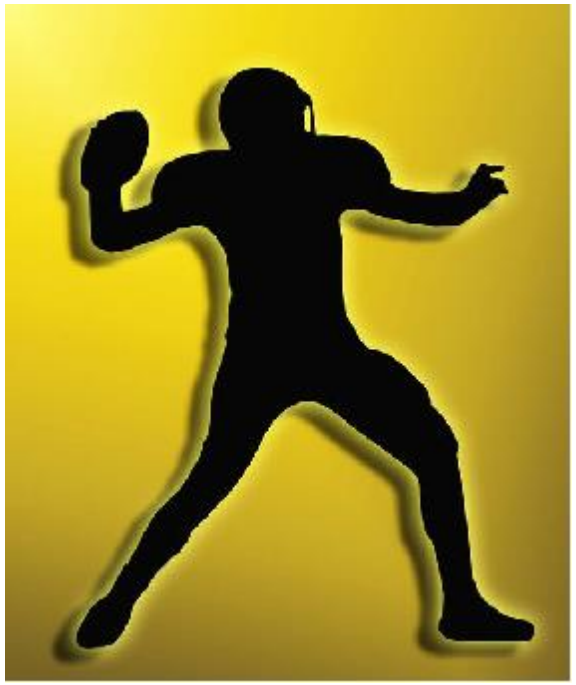
Course Introduction



Course Introduction



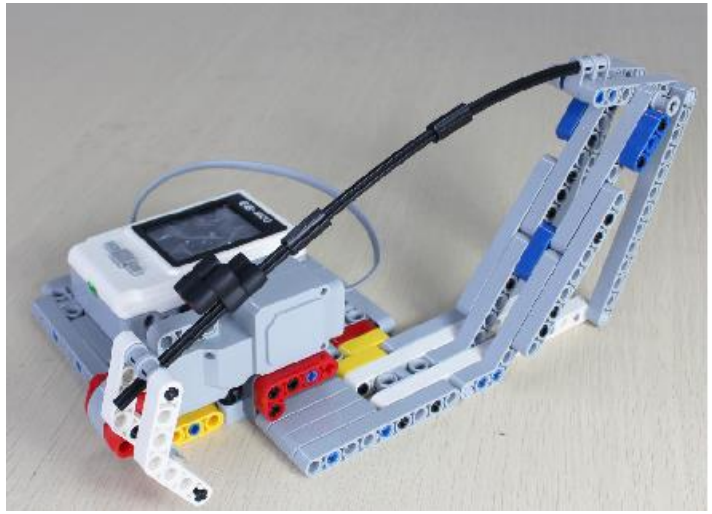
What do you know about the movement of the throwing class?

Throwing is throwing or throwing items at a certain target.

In life and sports we often see throwing moves such as rugby, throwing javelins, throwing garbage and so on.The trajectory of the item is a parabola. According to the trajectory of the movement, we can calculate the location of the item.At this time we need a robotic arm that can precisely control the strength and direction to throw the item out.

Let's learn together.

Course Introduction



Throw

Know about Throwing robot

The robot in this lesson is called "Throwing Robot". The robot mimics the structure of the ancient slinger, using a large motor as the servo motor and mounting the elastic rod on it. The RCU is placed in the middle to maintain the overall center of gravity, ensuring a good balance when travelling.

Let's learn together.

Teaching New Knowledge



Teaching New Knowledge

When performing angle programming, students need to be more sensitive to angles and perform precise programming.We can use the estimation method + folding method + fine adjustment to zero or reach the angle you want.Let's first recognize the names of the various angle ranges:

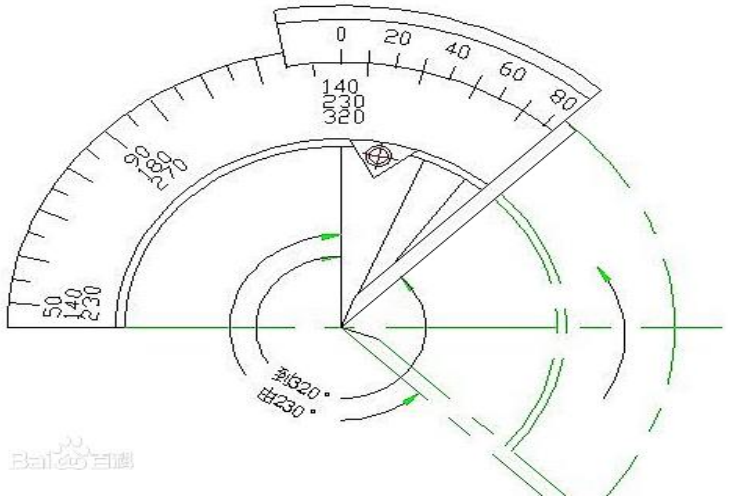
Week angle: 360°

Flat angle: 180°

Obtuse angle: 90°<x<180°

Right angle: 90°

Sharp angle: <90°

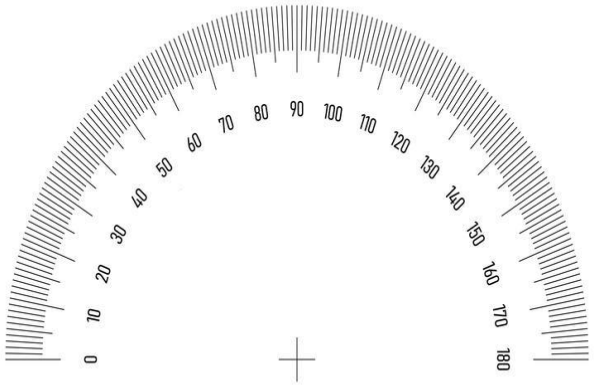


Teaching New Knowledge

[Evaluation method]: Judging the expected angle as acute angle / right angle / obtuse angle / flat angle.

Assuming that the estimated angle is too large or too small, we adopt the [folding method]: modify the original angle to double or 1/2 of the angle of the estimation method (provided that the limit angle of the mechanical device is not exceeded).The folding method can be performed multiple times until it is close to the angle of the pre-judgment.

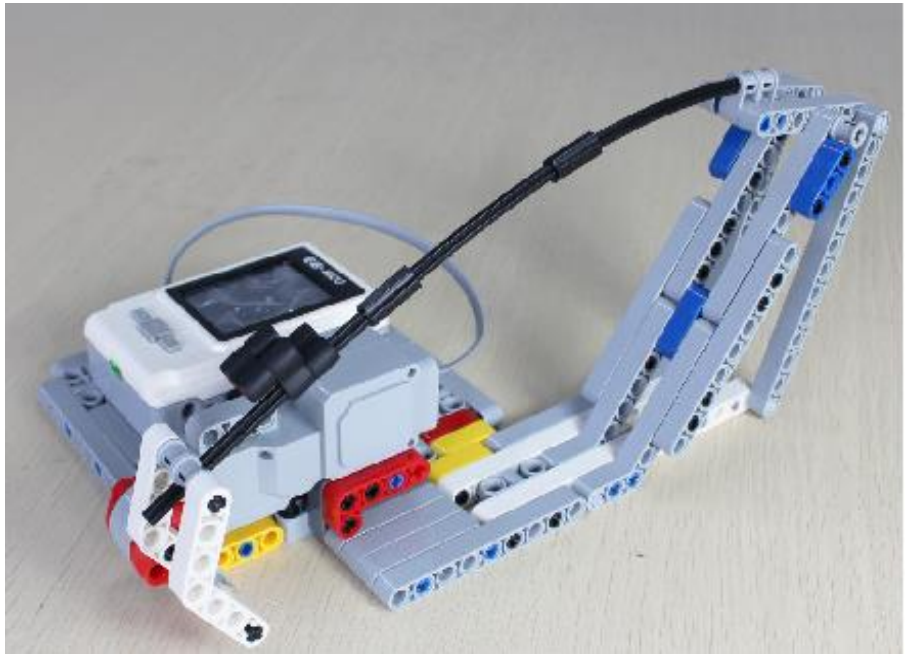
Finally, perform [fine adjustment] and adjust the mechanical position to a reasonable position by +-5° based on the above angle.



Task Practice



Task Practice



Assembly requirements

1. stable structure
2. focus is right
3. shape match

Programming and Debugging



Programming and Debugging



1. Program and debug all the above common angles, such as 30°, 45°, 90°, use the estimation method/folding method/fine tuning method to call out the angle we actually need.

Programming and Debugging



2. Reasonable angle to cast the best angle

Checking Effect



Test Effect



Review the learning content and deepen your impression.

Question 1

What is the name of the robot made today?

Question 2

What hardware does the robot use today?

Question 3

How to make items throw farther / higher?

Thank you for watching

BE STEM READY

