06 -Remote Control Racing Car

Remote Control Racing Car

Basic Teaching Information					
Teaching facility	AI Module 1s	Teaching mode	Project-based learning	Class duration	90 minutes

Teaching Objectives:

1. Learn double-motor differential turning car;
2. Multi-sensor applications;
3. Learn "if then...else" module, conditional nesting, multi-branch structure.

Teaching difficulties:

1. Analyze the four functions of racing, which are forward, turn left, turn right and stop;
2. Four different permutations and combinations with double-touch sensor;
3. Learn the basic branch structure and the multi-branch structure through conditional nesting.

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Focus

In this lesson, we plan to build a remote control racing car by double-touch sensor, and make the racing car able to go forward, turn left, turn right and stop.

Exploration

The core of the remote racing is a touch remote for issuing different commands, and a car for receiving and executing different commands.

1. In this lesson, we need to use the remote control to realize the four functions of car “ forward", “turn left” , “turn right" and "stop".

Therefore, we choose the double-touch sensor as the trigger device of the remote control.

2. A dual-motor differential-speed turning car is used as a car to receive touch remote control signals.

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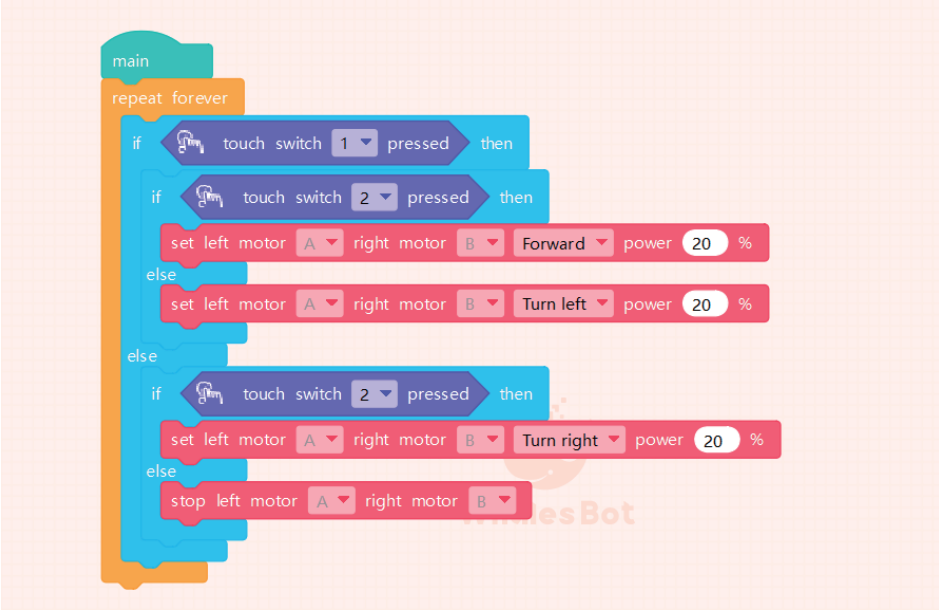
Creation

1. Two closed-loop motors, U-shaped beam combined with half-high bevel gears for vertical drive;

2. Combine the two parts of vertical drive structure to form the chassis of the car;

3. Wheels and tires for driving the car;

4. Controller.



Programming

This lesson focuses on multi-branch programs which is multiple "if...then, else" module. Students need to understand that although three "if...then, else" module are used, four branches are used. If the touch press is marked as 1 and the release is marked as 0, two touch switch can achieve 11, 10, 01, 00 four combinations.

Use the "if...then, else" module, if touch sensor 1 is pressed, add the second "if...then, else" module, if touch sensor 2 is also pressed, the racing car execute the forward command, otherwise execute the turn left command.

if touch sensor 1 is not pressed, add the second "if...then, else" module, if the touch sensor 2 is pressed, the racing car execute the turn right command, otherwise execute the stop command.

Evaluation

1. What sensor is used in this lesson?

Touch sensor.

2. With two touch sensors, how many different combinations can be realized? And what are they?

4 combinations. If touch sensor pressed marked as 1 and touch sensor released is marked as 0, there are 4 combinations: 11, 10, 01, 00.

Show

Key point 1: Introduce the turning principle of the dual-motor differential-speed turning structure. Functions of remote control racing car. The combinations of double-touch sensors.

Key point 2: Explain programming logic and process control.