Morse Code - NXT

Suggested Time

90 minutes

Challenge

In this activity, use an NXT car equipped with a light sensor to determine the hidden Morse Code message (under a table or in another room). The message will be determined using light sensor collected data on a pass over of the message.

Age

8 - 13

Topics

Gears, Graphing, Data Collection & Analysis

Subjects

Math & Science

Programming Themes

Light Sensor Data Collection

Related Math & Science Concepts

- Gears

Materials

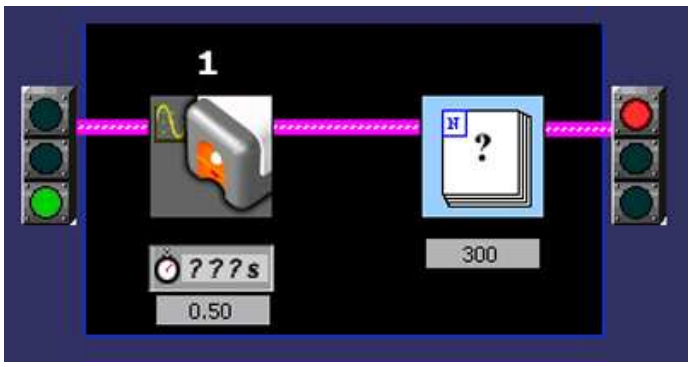
- NXT Car
- Light Sensor
- Morse Code Translation Sheet
- Statement Written in Morse Code

Building Instructions

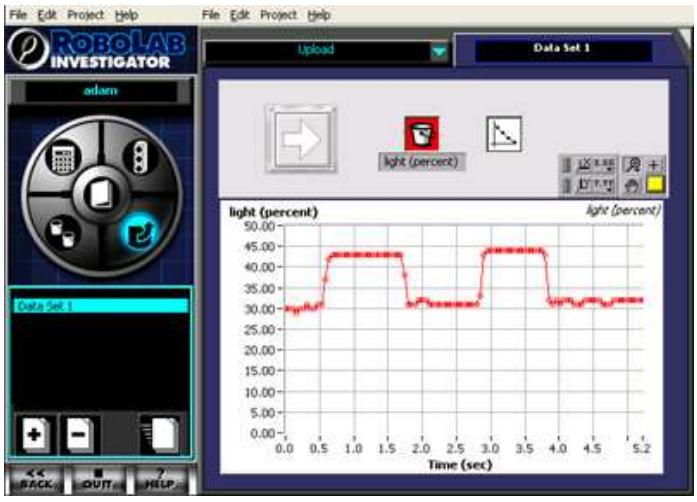
1. Build an NXT car equipped with a light sensor. Make sure that the car drives as straight as possible. You may want to gear the car down.

Programming Instructions

1. Using ROBOLAB INVESTIGATOR, program the NXT to collect light readings for a given period of time (you may have to tweak the number of readings and the time the car travels).



2. Collect and upload your data. Plot your results.



In Action

Run your vehicle over a hidden Morse Code message. Determine what it says.

Related Activities

- Scavenger Hunt
- Find the Hidden Letter
- Sturdy Car: The Drop Test

Building and Programming References

- Building With Beams
- Axle Uses
- Connector Pegs & Bushings
- Hubs and Tires
- The NXT
- NXT Motors & Wires
- NXT Light Sensors

Knowledge Base

- How do I export data from investigator to excel?

Classroom Management

1. Hide a letter coded in Morse Code. It can be hidden in another room or under a table. You can use the attachment "Creating Letters in Morse Code".
2. Begin the lesson with a brief description of Morse Code and how it was used.
3. Each car should be programmed in Investigator (Pilot 1) to collect light data while you push it.
4. Each student or team of students should have an NXT car with an attached light sensor. The light sensor should be pointing down and as close to the floor as possible.
5. You can run through one of the letters as a class so students will understand how to read the graphs and translate the data to Morse Code.
6. Upload the data from your NXT (in the Upload Area of Investigator) to look at the graphs.
7. Have the students figure out this letter own their own or with their group.
8. Include time at the end of the lesson to talk about the activity and discussing additional uses of graphs.