

# iRobot

## Members

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## iRobot

Model: LEGO MindStorms, Robotics Invention

Components: RCX programmable Lego brick

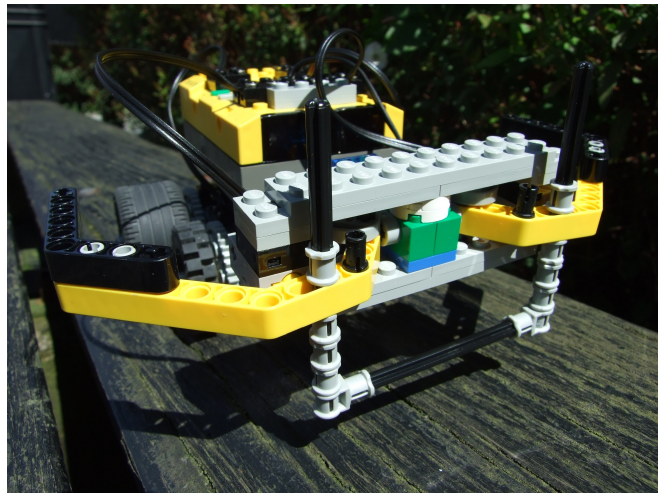
2 DC-motors

2 touch sensors

1 light sensor

Software: RCX 3.28 firmware

NQC programming language / environment



## Description

The iRobot's construction is based on the "Roverbot" in Lego's Constructopedia handbook, a design that in our opinion offers a good compromise between power and speed. We kept the robot as stable and compact as possible positioning the light sensor under and touch sensors very close to the brick. The robot was built to find its way in unknown terrain, following a white line on green surface, where it detects black spots (gaps) in the track showing its position in the environment. However, the detection of the gaps is achieved by investigating the area around the gap instead of trying to sense the rather small difference between black and dark green. iRobot is able to complete the following tasks:

- climb a plateau using a ramp
- move a rock / an obstacle off the path and return to the path
- find its way in a cave and back on the track
- follow a large rock
- recognize forks / gaps in the path and choose the right (predefined) direction

We used NQC despite its limitations, since we did not have the time to experiment with the RCX's possibilities and focused therefore on completing the tasks in an acceptable manner. For this reason we also used the algorithmic approach, which should be sufficient for solving predefined tasks in a marked terrain.