Educational robots for teaching programming to youths

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Date

# Abstract

 **What you set out to do and why**

 **How you did it**

 **What you found**

Do this last

What have I done? – Not concise, mostly not relevant right now

In this project an interface has been produced which allows Scratch, a simple and accessible programming development environment, to be used to send commands to a Thymio-II robot locally on one computer or using multiple machines over a Local Area Network (LAN). This interface allows programmers to see sensor data from the Thymio-II and send commands to control the wheels of the Thymio-II.

Three types of sensor data can be received, these are the proximity sensors, the floor detection sensors and an accelerometer. The proximity sensors are a series of 7 infra-red distance sensors which can detect an object up to approximately 10 centimetres away. The floor detection uses the same infra-red sensors but they also make use of ambient light to try and detect if there is a surface beneath them. The accelerometer is used to detect the Thymio-II’s orientation and has 3 axis.

Three types of wheel control exist, these are, discrete commands, direct control and arc movement. Discrete commands make use of time and speed variables to determine the parameters for each action. Each action is sent via a broadcast and contains a string of what action should be performed, such as “forward” or “right”. These commands cause the robot to, for example, move forwards in a straight line or turn to the right on the spot. Direct controls allow 2 variable to be used to store and set the speed of the left and right wheel allowing for more variety in movement but also makes the input more complex. The arc movement uses the speed variable and length and radius variables to set the parameters of an arc, then broadcasting the arc command cause the robot to follow this arc.

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# Aims and Objectives

# Literature Review

# Methodology

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# Appendices