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# Development of an agent for a robot that follows a line

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Intelligent And Mobile Robotics

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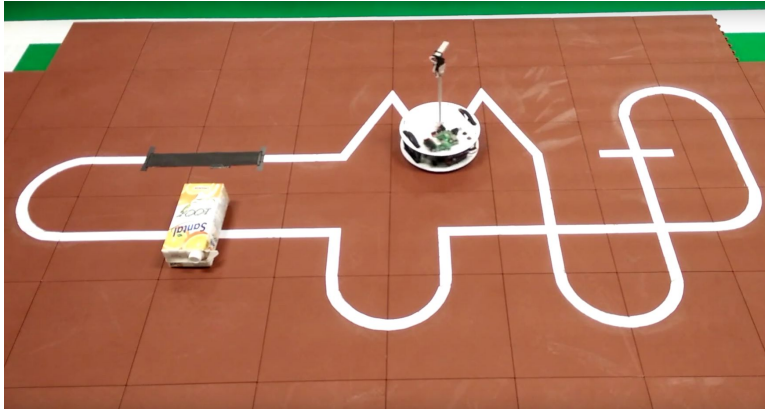
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What kind of robot is it?

What is it supposed to do?

# Scenario

The objective of the robot is to overcome all the challenges provided while following a line. It includes interrupted line, obstacles and tight curves.

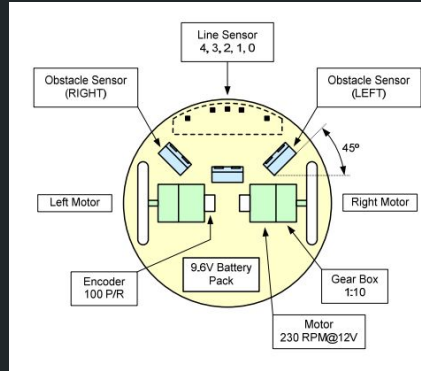


**Fig 1.** Scenario used for tests with a white line and several challenges.

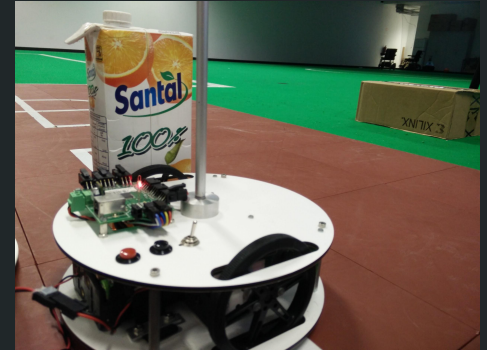
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# Robot

It has several components that allow him to perceive and act on the environment. Such as, **line sensors** to detect line, **obstacle sensors** to find obstacle, **motors** to move on it and **encoders** to check his position.

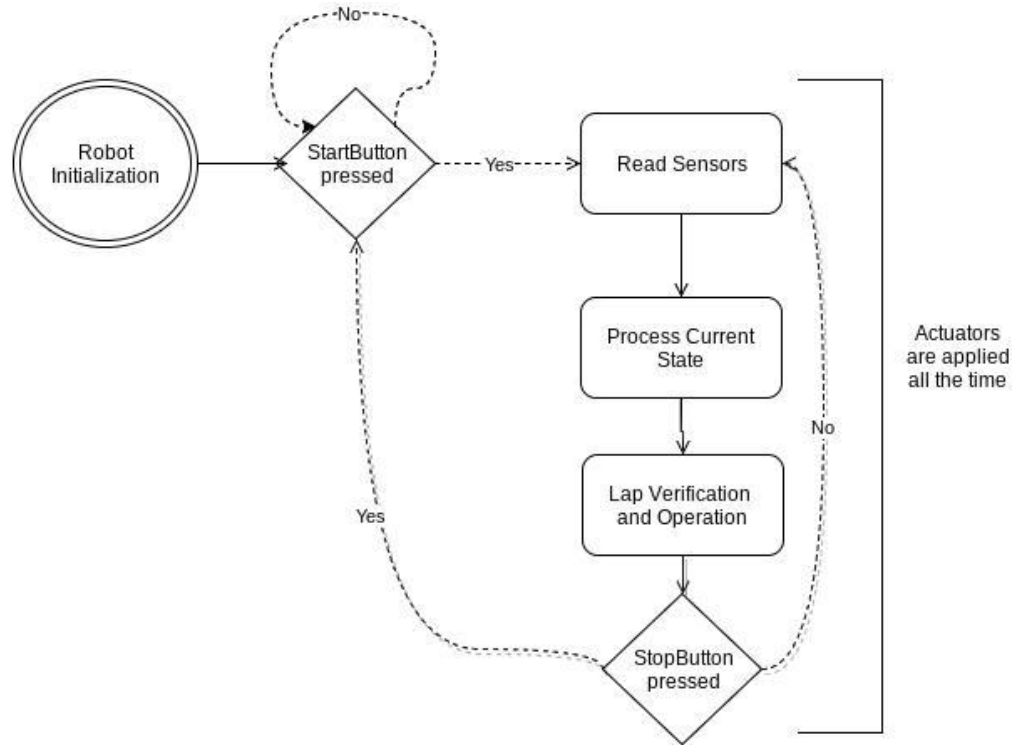


**Fig 2.** Robot used with the respective hardware.  
(Source: Document provided with the project description)



**Fig 3.** Image of the robot used near an obstacle.

# Main flow of the robot



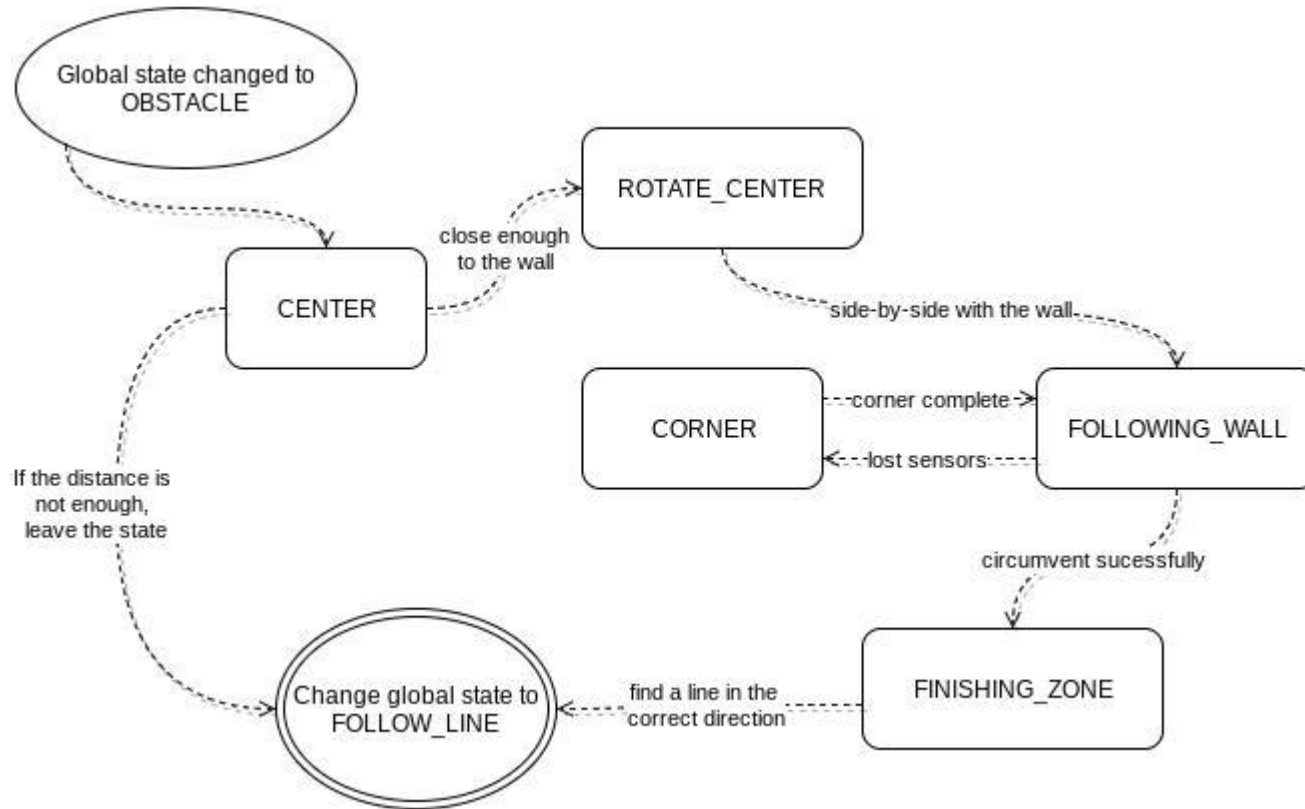
# States of the system - **FOLLOW\_LINE**

- Following line with a base speed of 60
  - ◆ Had to reduce the gain
- Responsible for the tight curves
- Handles interrupted track
- Obstacle detected in other zone that is not close enough

## **Strategy used:**

- Proportional controller
- Ground sensor buffer with 100 entries

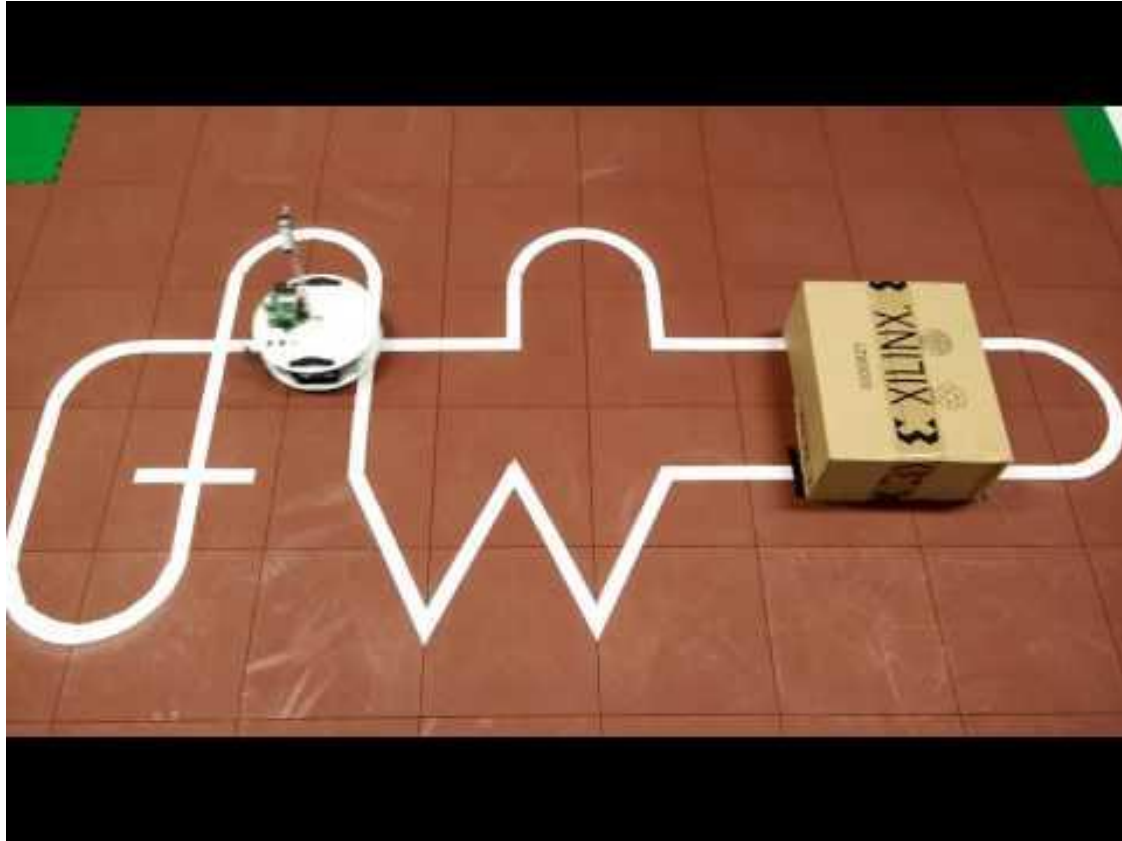
# States of the system - **OBSTACLE**



# Demonstration



# Special Case - Circumvent obstacle in two lines





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# Questions?