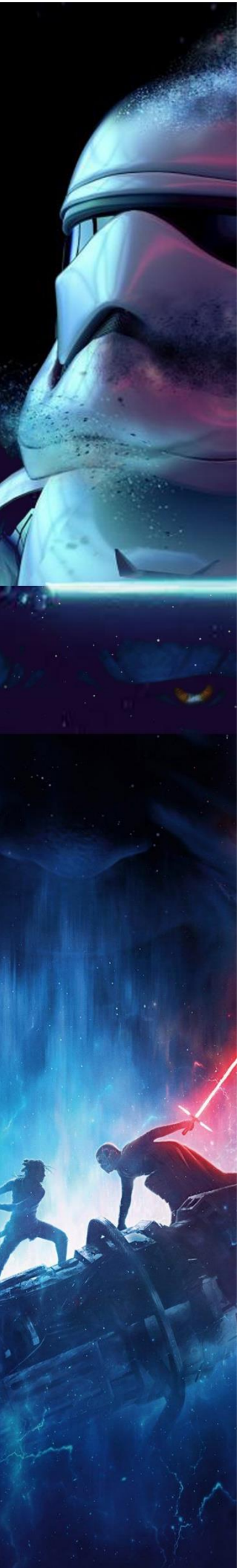


Webots nodes that we use:

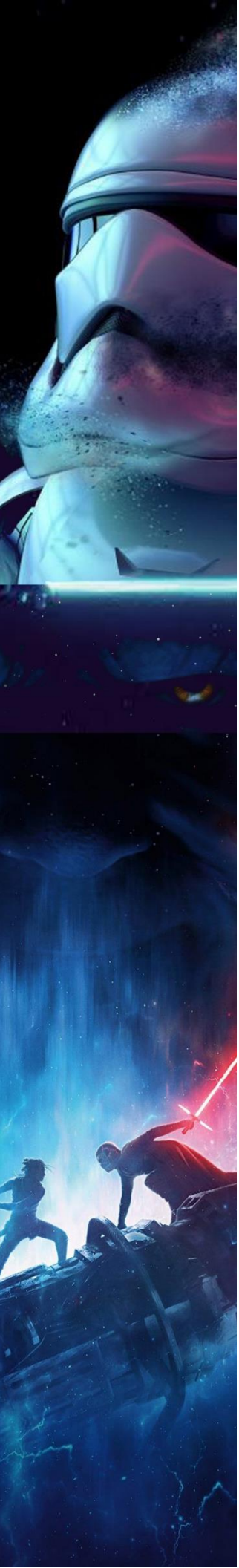
- Distance Sensor (Infra-red)
- Robot

Task:

- The task is to simulate a line following robot using IR sensors.
- There are 7 distance sensors (IR) for line following.
- The Robot should be able to follow a white line on a black background.
- The robot should start from the white square named as START and finish from the square named as END.
- While the robot is following the white line, it should count all the pillars on both sides. At the end it should display the number of pillars on each side (Left and Right) on the console in the following format.

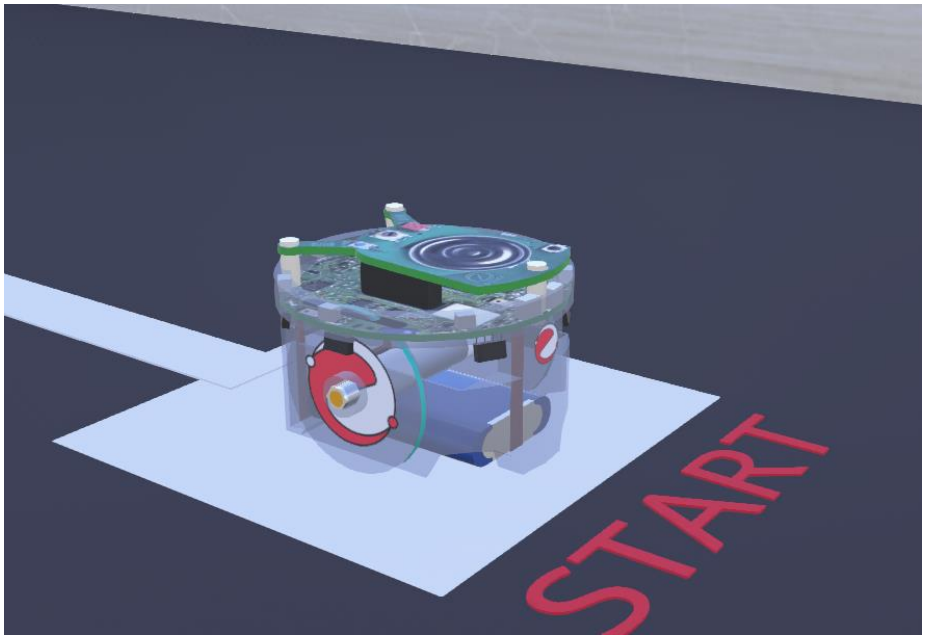
  "Left side pillars – 4
  Right side pillars – 3"

- The robot should be able to take any turns: curved or 90 degree turns.
- The code submitted by the competitors will be tested on an environment which has the same dimensions of lines and qualities of the given environment.
- Please refer the scene tree before starting the task to find the necessary nodes and their positions.
- **Competitors must not change the scene tree.**
- All the solid parts and nodes will be provided, and the **competitors are only supposed to edit the "line_following.cpp" file**. Competitors are free to make any changes to the initial code.



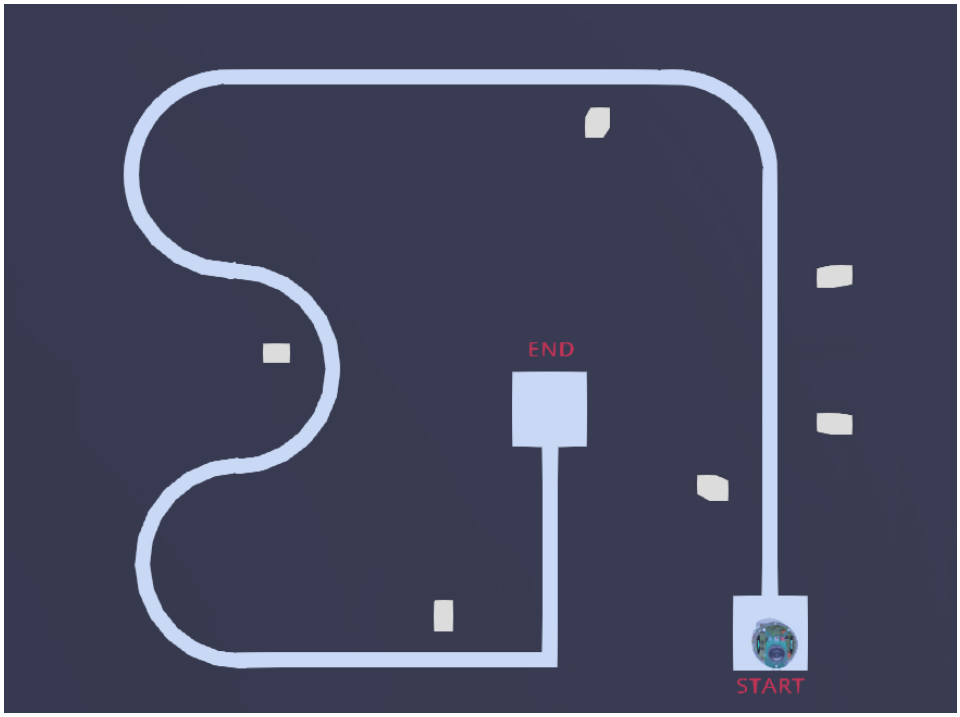
Robot

- The given robot has all the necessary nodes included.
- Competitors are provided with the default E-Puck robot in Webots with the necessary IR sensors and distance sensors included.
- Hint: Use a PID algorithm for a smooth line following. Smoothness will be evaluated during the evaluation process.

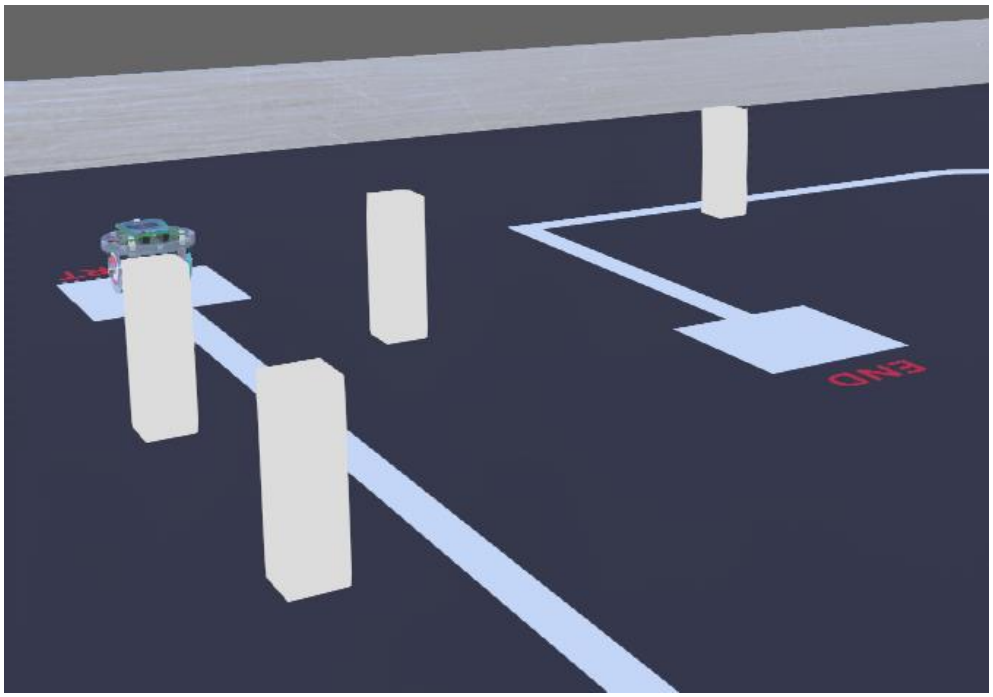


Robot given for the competitors

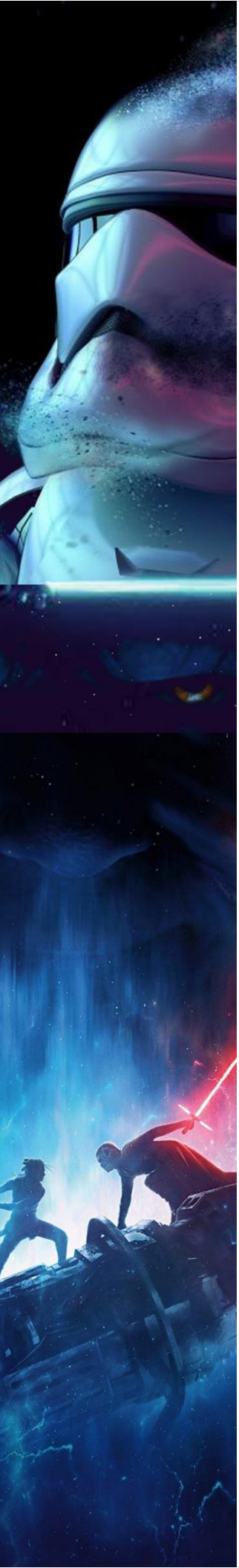
Layout



Top view of the arena



Pillar positions



Getting started:

- Refer to the following articles for information on using the components in webots documentation
  - Distance sensor (Type = Infra-Red)
- Go through the syntax for each operation in the library of a component.
- Come up with an algorithm for line following function.
- Properly organize your code in the space given.