Robotic convoy

This is a collaborative activity where several teams (between 2 and 5) work together to create a convoy of robots. The convoy will move on a predefined path. The total distance will be about eight meters.

Role of the leader

The leader follows a line to reach the destination. It has to stop completely when it reaches the final destination. The role of leader is as follows

- Follow the line
- Slow down for a few seconds than accelerate. The change in motion should be noticeable.
- There will be at least one obstacle on the convoy’s path. The leader should be able to detect the obstacle and fully stop. The obstacle will be removed so the convoy can complete the course.
- Stop at the destination point.

Role of the follower

The role of the follower is

- Follow the leader at a constant distance. The distance should be set to any specific value between 20 cm and 40 cm.
- Implement a proportional controller where the speed is proportional to the error between the desired value and the actual value of the distance. This is an important requirement for this lab that will be verified in the code.
- The follower cannot use line detection sensors.

Teams need to coordinate to decide about the speed, their position in the convoy, the sensors, etc. You are allowed to use any type of sensor for this activity, including vision sensors.

Grading

- The proportional control law will be verified, be sure to show your work.

Report

The due date will be announced later after the completion of this activity.