

{Learn, Create, Innovate};

Midterm challenge

*Multiple point navigation
with color identification.*

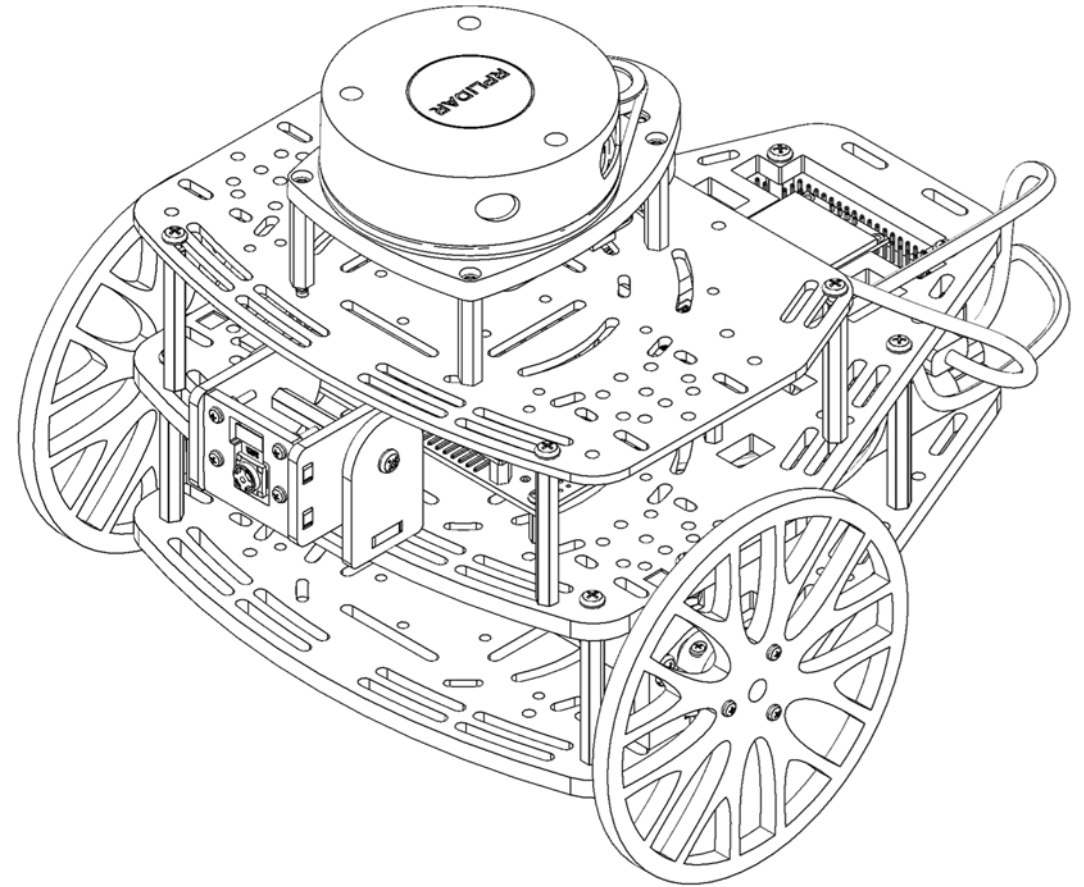




Mini challenge 3: Reactive Navigation



- This challenge is intended for the student to review the concepts introduced in this week.
- This challenge aims to show the behaviour of vision systems in mobile robotics.
- This challenge will be divided in different sections.

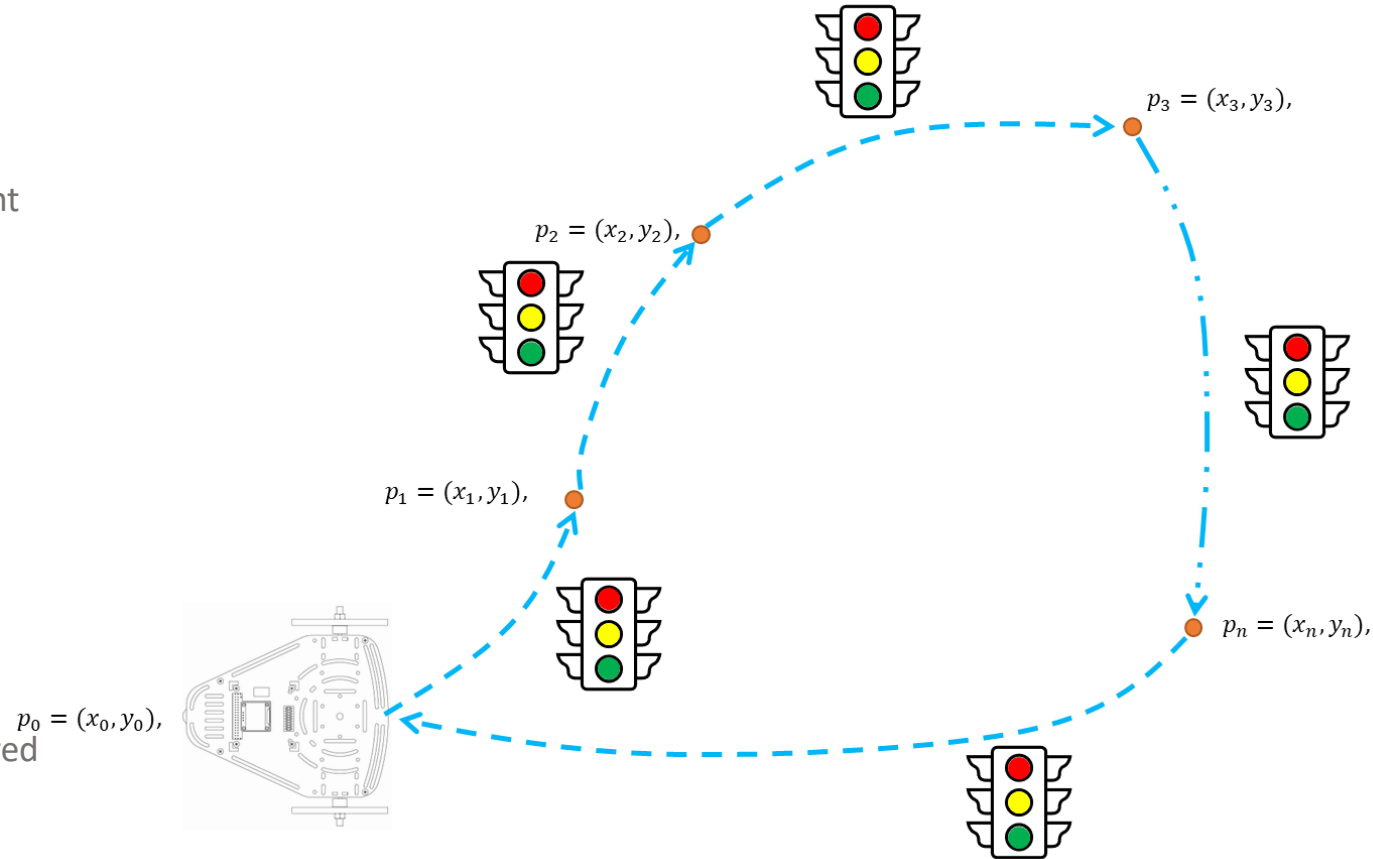




Mini challenge 3

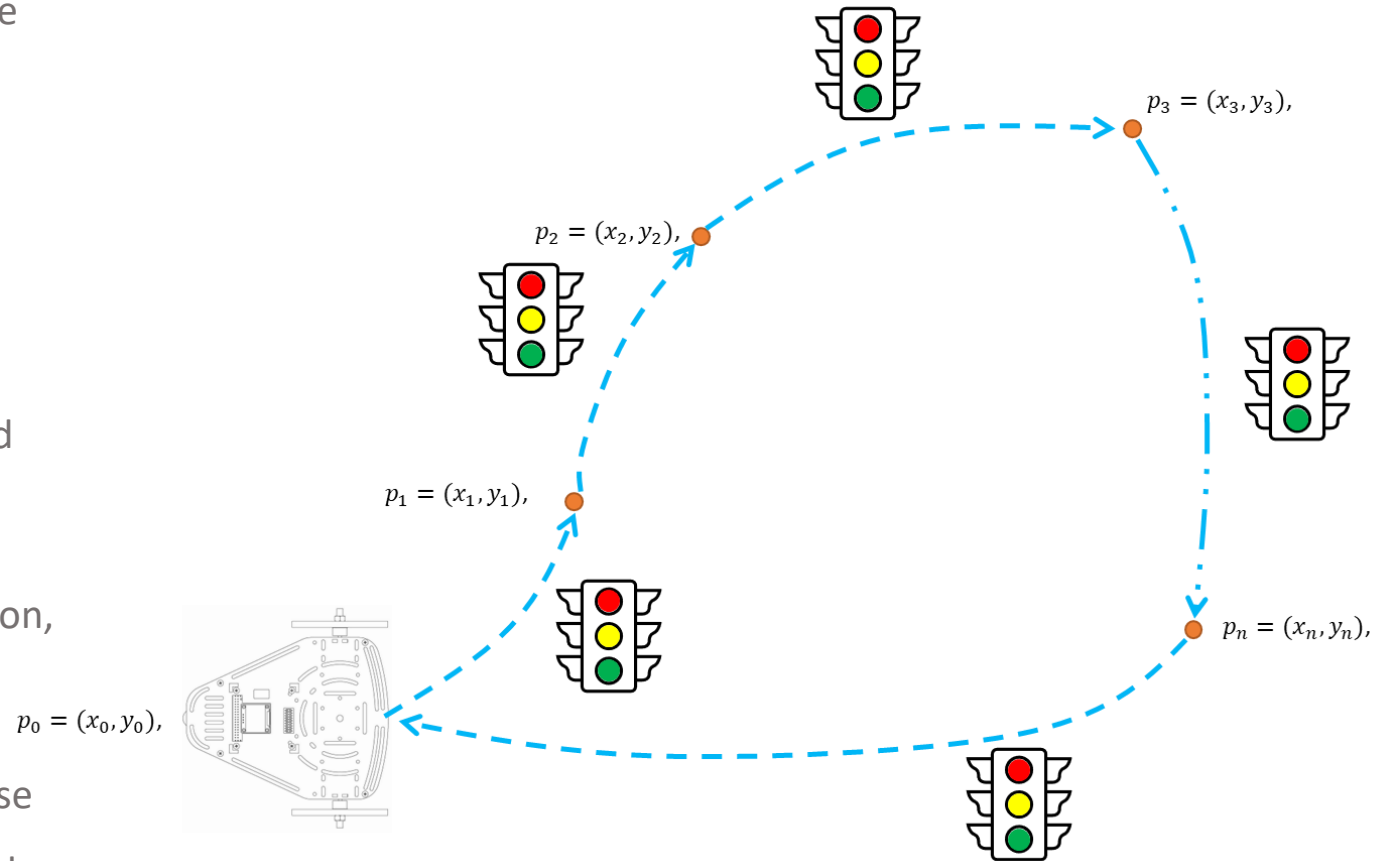


- In this challenge, the student must use and combine the knowledge developed in previous activities.
- Add a decision-making layer to your previously developed point-to-point navigation algorithm, to detect the colour of a “traffic light”.
- The expected behaviour is:
 - Red : Stop until you see a green light.
 - Yellow: Drive slowly, until you see a Red Light to stop.
 - Green: Continue with your Path.
- Note: You must remain stopped until you see a green light (Even if the red light disappears or you are not able to detect it.)



Mini challenge 3

- The vision algorithm and closed loop controller must be **robust**.
 - The student must define what is robustness and implement strategies to achieve it with the controller.
- The vision algorithm and the controller must be tuned properly.
- The controller must take into consideration, perturbation, nonlinearities and noise.
- It is encouraged, but not required, for the student to use a config file or a parameter in the launch file to establish the goal targets such that they can be changed outside the code (not hardcoded).





What's coming on the following weeks?



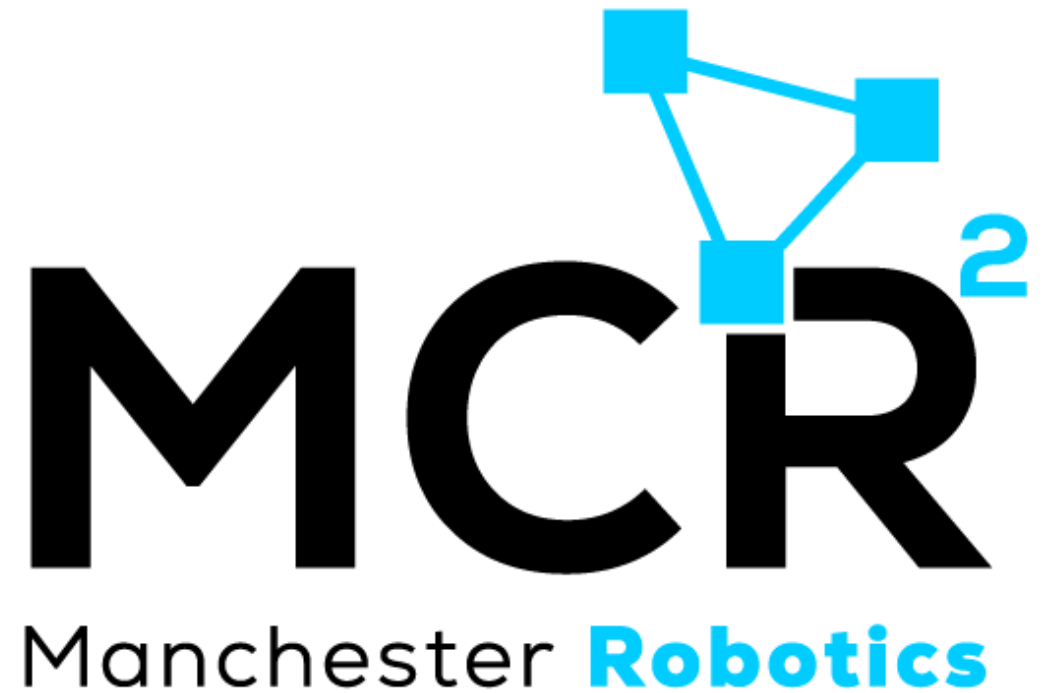
- Week 6 – Line following
- Week 7 – Neural network
- Week 8 – Final challenge
- Week 9 – Final challenge
- Week 10 – Final challenge presentations



Thank You

Robotics For Everyone

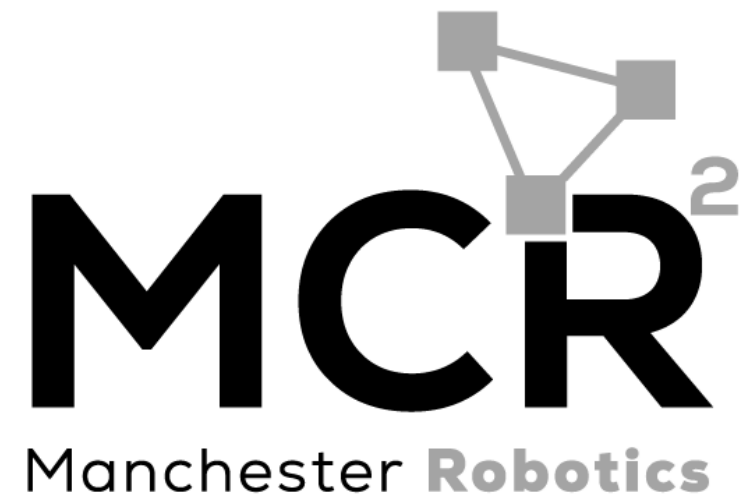
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T&C

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