

Embedded Motion Control

Group 1

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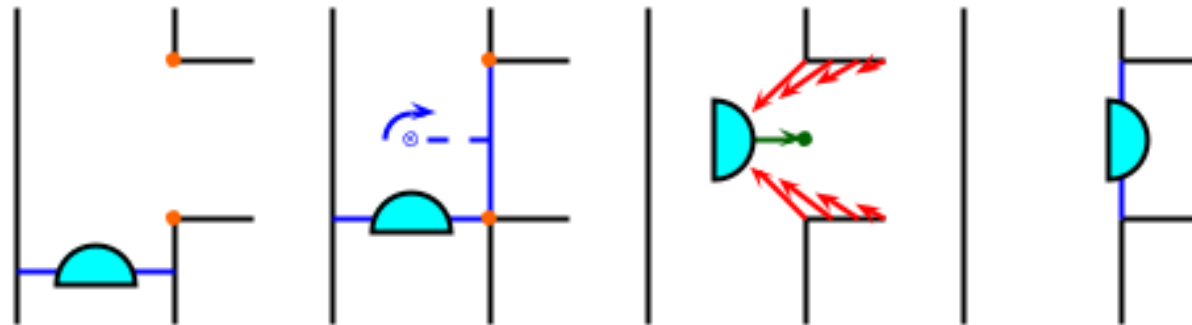
Where innovation starts

Contents

- **Corridor challenge**
- **Maze solving**
- **Geometry detection**
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Corridor challenge strategy

- **Align with laser on the straights**
 - Scan for an exit
- **Use odometry to center and turn**
- **Use potential field to enter the corridor**
 - Adjust for odometry error
- **Align with laser when possible**



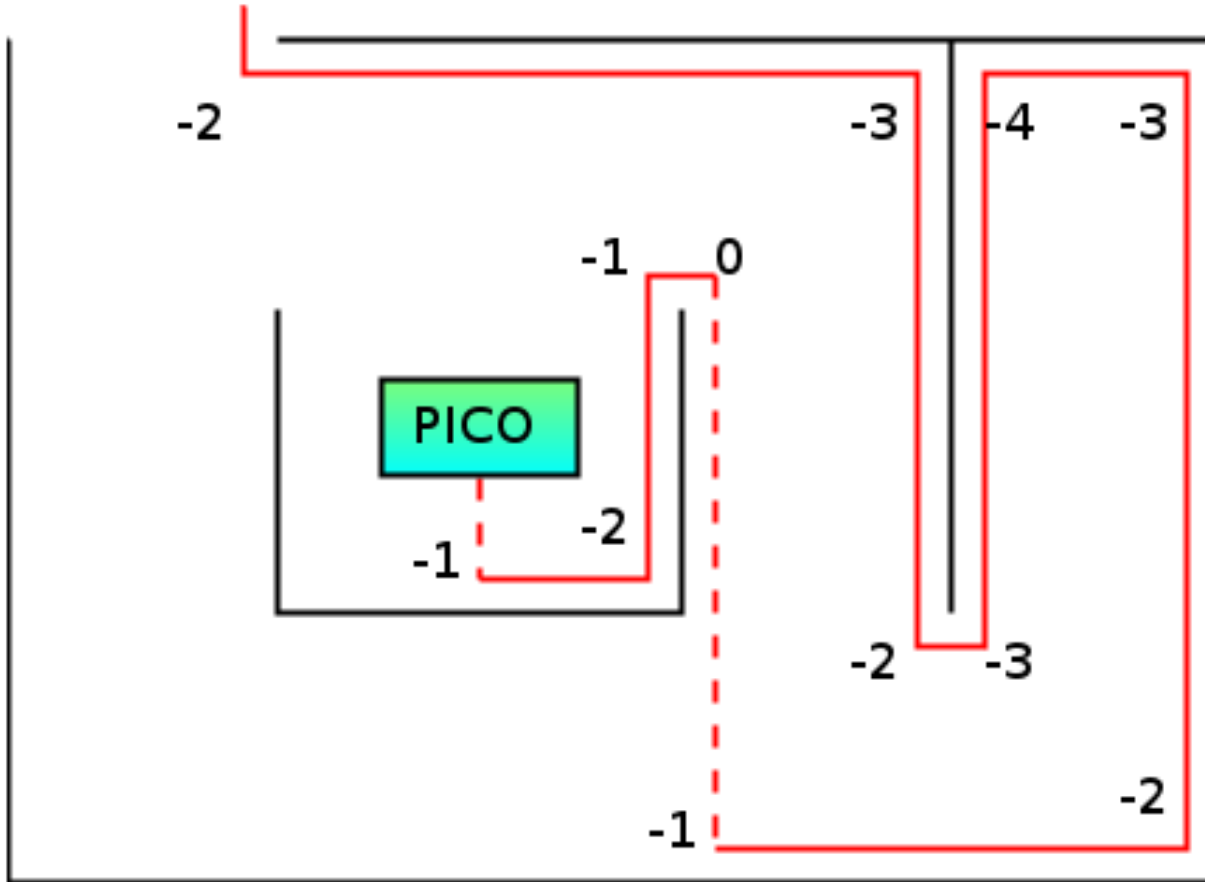
Corridor challenge

- **First attempt**
 - **Potential field steered it into the side**
 - **Scraping the edge, the safety margins were too tight**
- **Second attempt**
 - **Potential field adjusted favorable**
 - **Bronze medal (Approximately 17.5 seconds)**

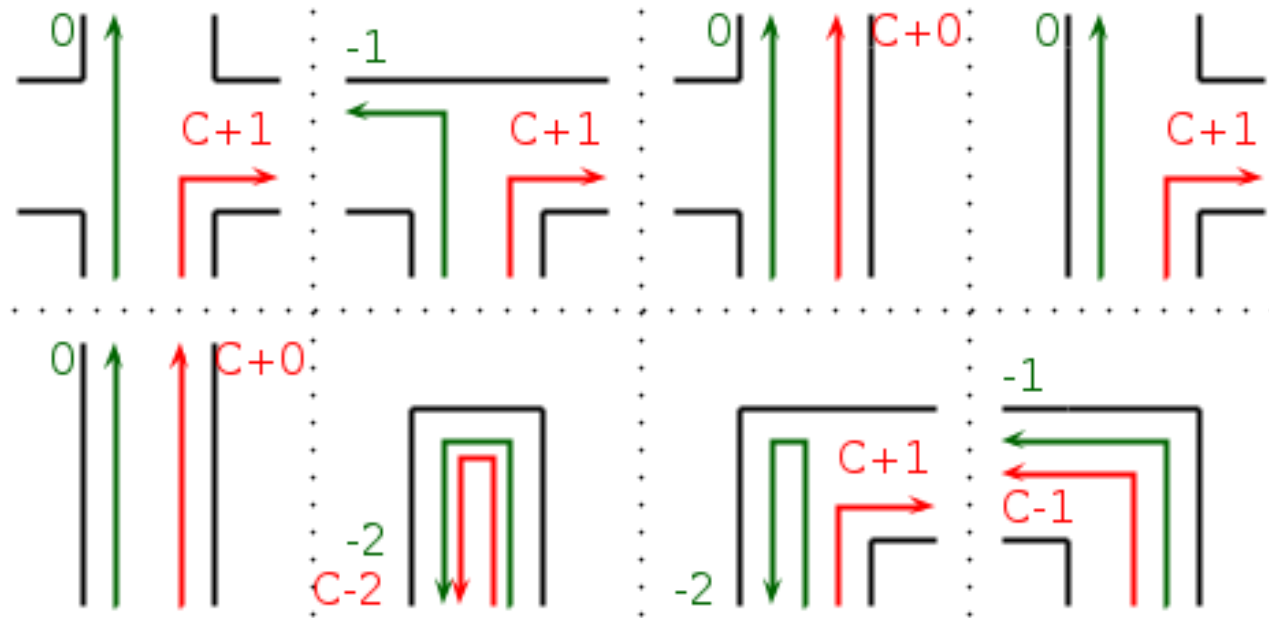
Pledge algorithm (Maze solving)

- **Three steps**
 1. Move in one direction until an object is hit
 2. Apply right hand rule until the total rotation is 0
 3. Repeat
- **Advantages**
 - Easy to implement
 - Able to exit any maze
- **Disadvantages**
 - Potential fields may cause problems
 - Geometry may cause problems

Example

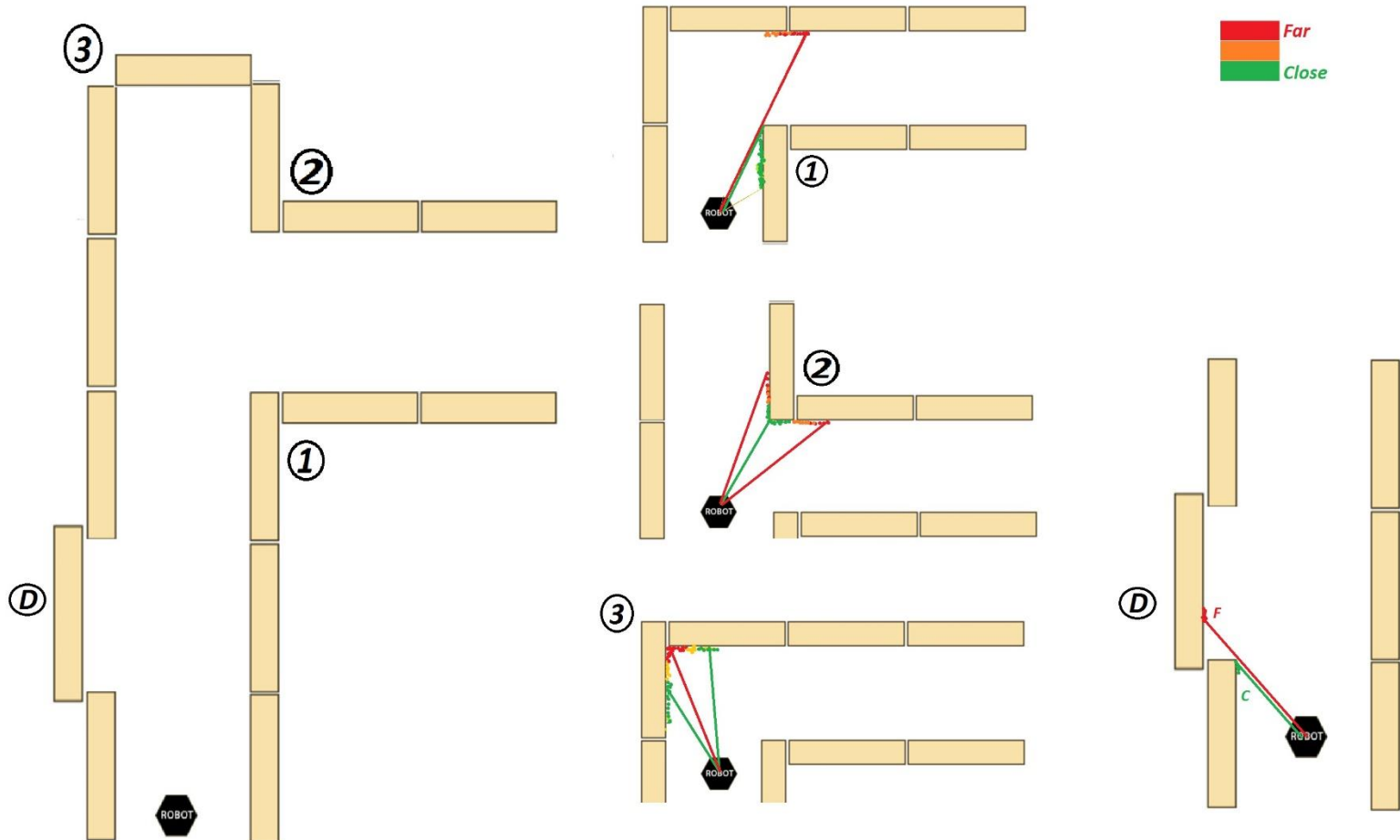


Implementation



Robustness of cornering is of upmost importance!

Geometry detection



Future tasks

- **Improved geometry recognition**
 - **Ensuring all environments can be solved**
 - **Discovering all doors**
- **Decrease error while cornering**
 - **Combine corridor tactic with potential field**
 - **Use landmarks to set the target correctly**
- **Run ./main**

Thank you for your attention!

Please feel free to ask any question