

MPC-MAP Assignment No. 2 - Report

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Task 1 – Creating maps

No output is required in this step.

Task 2 – Create a path

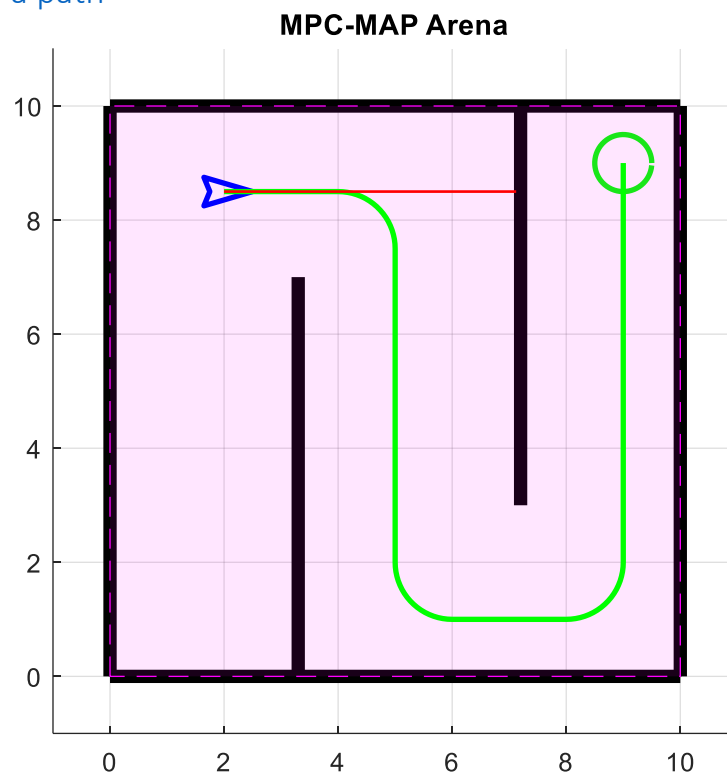


Figure 1 - Visualizing the path

Discussion: The path consists from straight lines and also curves. Variable `public_vars.path` was used as recommended.

Task 3 – Motion control

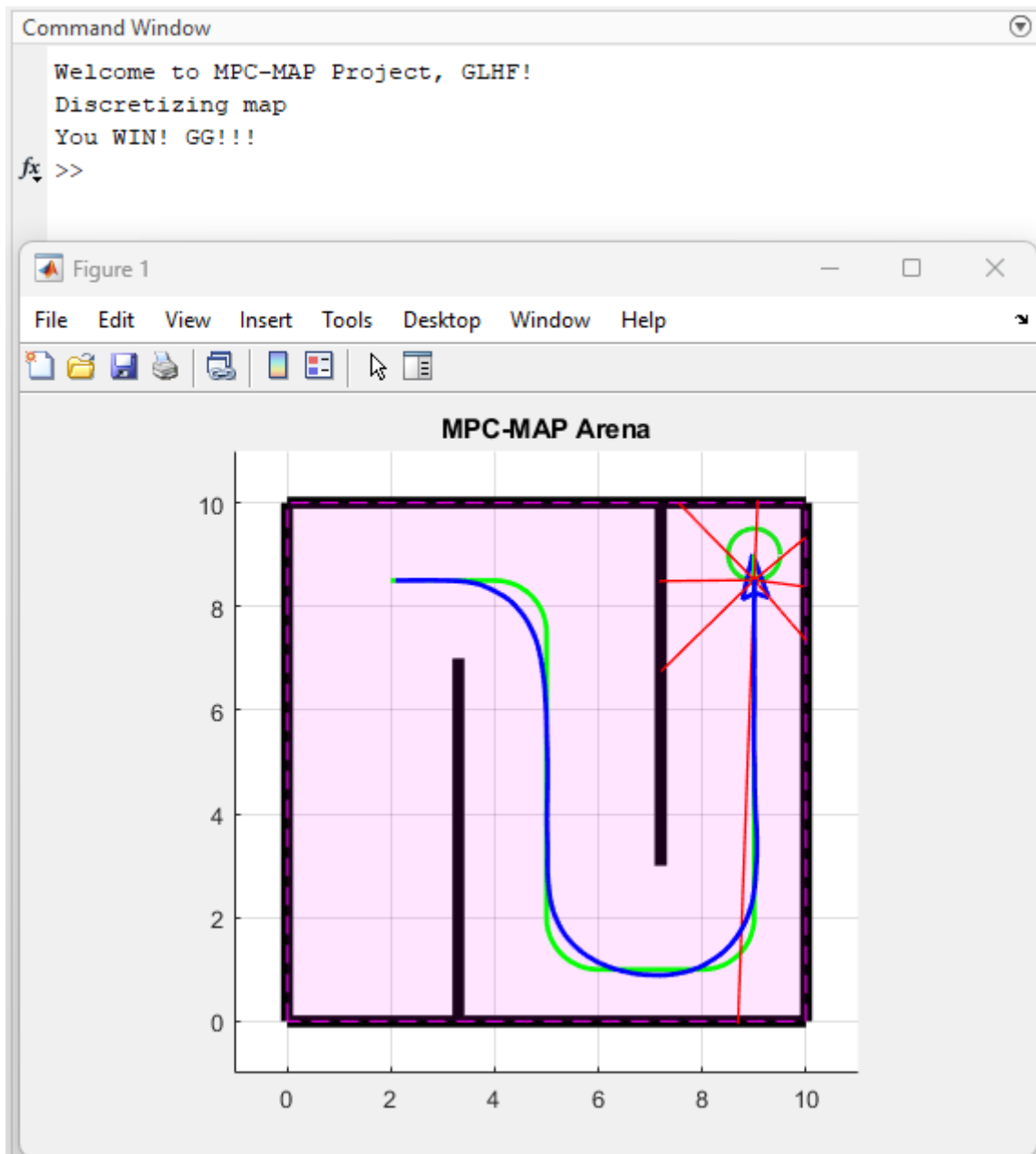


Figure 2 - Pure Pursuit with lookahead distance of 1.5

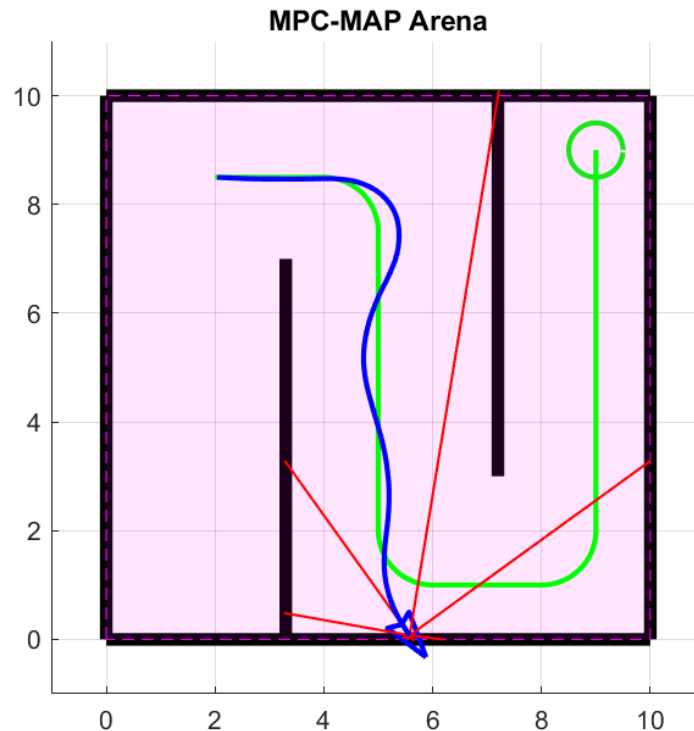


Figure 3 - Pure Pursuit with lookahead distance of 0.5

Discussion: First robot was set to the starting position (2, 8.5), then has been chosen and implemented algorithm „Pure Pursuit“. The robot successfully reached the target position on the map.

The quality of the motion control is affected by a chosen parameters in the following way: If the lookahead distance is set to 1.5, the oscillations are minimal, as shown in Figure 2. However, if the lookahead distance is set to 0.5, oscillations become significant, and the robot will hit the wall.

There is almost no difference when comparing oscillations at lower or higher speeds of the robot.