

MPC-MAP Assignment No. 5

The goal of this assignment is to implement a working path planning algorithm.

Create a single A4 report that will describe your approach to the exercise (3-6 sentences for each task and picture, if makes sense).

Task 1

Implement the basic A* algorithm which finds a path between the starting position of robot and the goal position in map. Consider that all transitions have equal costs. The path must not collide with any wall. Use the occupancy grid stored in variable `game_state.discrete_map.map`.

Task 2

Adjust the planning algorithm to keep clearance from obstacles. You may use any method. The clearance should be at least 0.5 m.

Task 3

Apply a smoothing algorithm to the generated paths. Use the iterative algorithm provided in the lecture. Discuss the effect of the algorithm parameters.

Submission

Send the report and all related MATLAB scripts at tomas.lazna@vutbr.cz.

MATLAB script must be executable without errors and has to generate all graphical outputs that are in the report.

Deadline: 20th Mar 2022, 23:59.