Template of Report for PDM

Group names (and student numbers)

*Abstract*—Keep short - the whole paper shall not exceed the four pages plus references (Strict).

# Introduction

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# Robot Model

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# Motion Planning

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# Results

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# Discussion

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##### References

1. M. Young, The Technical Writer’s Handbook. Mill Valley, CA: University Science, 1989.

# Motion Planning

Path planning involves determining with the help of algorithms, a collision-free path in the dynamic environment that the vehicle will be operating in. The goal is to select and utilise one algorithm which is allocated the task of computing a continuous path connecting the autonomous vehicle from an initial to a final goal configuration. Motion planning can be further differentiated into global or local planning.

Often times, a global planning algorithm is used which provides an optimal path given complete environmental information. This performs best when the environment is static. Since the environment that the autonomous vehicle will operate in for our task is a dynamic environment, a local path planner will also be utilised which will use information from sensors and generate changes in the global path based on the movement of obstacles in real time.

For the purpose of our simulation, a thorough examination of the various available options for global and local path planners has been done to ensure an informed decision is made in regards to the selected techniques[1]. The main factors when selecting the global path planner were 1) ability to find the most optimal path in a static environment 2) Should be expandable to dynamic environments 3) Should minimise complexity and computation time. The main factors when selecting the local path planner were 1) Should be operational in a dynamic and cluttered environment 2) Highly effective in different environments 3) Should have a really low computation time [2]

The selected global path planner is the informed RRT\*...explain more…..compare with a few other planners

The selected local path planner is MPC…..explain and compare…..