

ABSTRACT

MOBILE ROBOT PIECE-WISE LAGRANGE POLYNOMIAL TRAJECTORY PATH SIMULATION OF STATIC OBSTACLES AND OVERTAKING USING V-REP (VIRTUAL ROBOTICS EXPERIMENTATION PLATFORM)

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As robotic became common to use in the industry in general, the need to design and test a robot behavior with the lowest cost and minimal risk as possible became a top priority of any company. This create a big opportunity in robot simulation and modeling for years to come as robot will be more advance and complex as years progress thus creating a lucrative prospect for anyone who pursue this fields. The purpose of this study is to create an Automated Guided Vehicle (AGV) robot path planning simulation using Lagrange Polynomials as the base mathematical function to generate path for the robot. Including obstacle avoidance system for static or dynamic obstacles within the environment. V-REP will be used as an integrated simulation software mainly because it is free and have a lot of features built in for this kind of project. This thesis paper provides a fundamental example of robot simulation and modeling as such can be used as example, overview or starting references for student who interested in this type of study field.

Keywords: Automated Guided Vehicle (AGV), obstacle avoidance, path planning, V-REP, Lagrange polynomials, static obstacles, dynamic obstacles, simulation software