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Mobile Robot Manipulator Kinematics Motion Control Analysis with MATLAB/Simulink

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Abstract : The purpose of this paper is to investigate the sophistication of the use of Proportional Integral and Derivative Control to control the kinematic motion of the mobile robot manipulator. Simulation and experimental methods will be used to investigate the sophistication of PID control to control the mobile robot arm in the collection and placement of several kinds of objects quickly, accurately and correctly. Mathematical modeling will be done by utilizing the integration of Solidworks and MATLAB / Simmechanics software. This method works by converting the physical model file into the xml file. This method is easy, fast and accurate done in modeling and design robotics. The automatic control design of this robot manipulator will be validated in simulations and experimental in control labs as evidence that the mobile robot manipulator gripper control design can achieve the best performance such as the error signal is lower than 5%, small overshoot and get steady signal response as quickly.

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