Abstract

IMPLEMENTATION OF MODEL PREDICTIVE CONTROl ALGORITHM WITH PULSE WIDTH MODULATION METHOD AS SPEED CONTROLLER ON WHEELS ROBOT CAR

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Algorithms conventional of wheeled robotic movement when they have an uphill path type will produce a movement that is not constant. Speeds at a flat trajectory will vary with the type of trajectory speed uphill. This is due to the lack of control algorithms contained in the movement of the conventional robot wheels.

Algorithm Model Predictive Control (MPC) is a control algorithm that can support a process by providing assistance in the form of improvements to the results obtained with a yield close to the desired value. Pulse Width Modulation (PWM) is a way to digitally control the speed used on the motor. PWM will regulate the timing of the ratio of voltage to the motor. Implementation of the MPC algorithm will be applied to simulation software robot car wheel movement. PWM also be applied to the simulation software by improving speed of wheels on the movement of a robot car. Simulation is a good imitation process resembles the real thing and its surroundings, or may represent in part.

Parameters to be compared, namely: speed, mileage, and travel time. Input system with the kind of trajectory is flat and uphill path. System output in the form of travel time, speed, and distance that can be taken. Based on the results of testing on the simulation, the MPC algorithm can improve the speed on the track conditions changed rising to the limit of a maximum elevation by 25^0 and takes relatively little with the conventional movement of wheeled robotic algorithms.

Keywords : Implementation, Algorithms, Model Predictive Control, Velocity, Mobile robot