AUTONOMOUS TRANSPORT VEHICLE FOR FACTORY WITH AUTO CHARGING DOCK USING PID

Bachelor of Science and Technology Dissertation

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Abstract

Autonomous transport vehicle for factory with auto charging dock-using PID, falls under the autonomous guided vehicle (AGV). The intention of this research is to develop the electronic circuit system to measure the battery charge value, and to computer program the intelligent steering drive method using Proportional, Integral and Derivative (PID) functions. Nowadays there are many types of autonomous vehicles, most of them are using wired communication methods, and they have to change their battery manually. This project deals with the development of a transport vehicle based on a line follower with either black, white or different color and the vehicle battery is charged automatically in specific charging dock (charging area). PID control of transport vehicle is a method consisting of Proportional, Integral and Derivative functions to improve the movement of the robot. The vehicle uses special sensors to identify the line thus assisting the robot to stay on the track. The robot is driven by DC gear Motors to control the movement of the wheels. The Arduino Mega Microcontroller will be used to perform and implement PID algorithms to control the speed of the motors which are steering the robot to travel along the line smoothly. This project aims to implement the PID algorithm, control the movement of the robot by proper tuning of the control parameters, and thus achieve better performance.

Keywords: Autonomous, PID, DC, Arduino, Vehicle, motor