

TRACK CLEARANCE USING ROBOT

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ABSTRACT

Robotic term had been greatly known in the society today. Many types of robots were developed with the purpose of aiding or replacing human in their job where, this is especially done in some countries that are having low quantity of labours. Robot holds an important role because it is not only capable to cover a broader range of tasks but also it can perform more efficiently than what people can do. Thus, track cleaning robot as a representation of those robots is created to replace people from doing some repetitive, exhausting, and boring job like clearing the track more effectively. In this paper, the design and construction method of a robot that can remove the obstacle in a circular track are presented.

This project uses an analog distance sensor as an object recognition module, L293D motor driver as dc motor controller and PIC16F877A as the main controller. Furthermore, servo and dc motors are implemented in the robotic arm and base designs that are responsible for the movement of the robot. Controlling the servo and dc motors is done by utilizing a PWM technique that is applied to the 16F877A PIC through programming on microC pro software. The angle rotation of each servo motors is adjusted accordingly to position the end effectors near the object at which it enables the robot to carry and remove the obstacle. Besides that, the speed of dc motors is varied in order to enable the robot moving on circular track.

The prototype of the project was successfully constructed and it is able to achieve the objectives that had been set. However, the robot only can remove any small object due to limitation of the gripper design. This project helps to improve student understanding and skills for both hardware and software implementation and emphasize the student to apply the knowledge obtained from various subject in the project design.

Keywords: *analog distance sensor, L293D motor driver, PIC16F877A microcontroller, microC pro software.*