

CLEANING ROBOT

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ABSTRACT

Nowadays, robots are made to replace human or workforce especially in manufacturing field. This is due to the efficiency and effectiveness of a robot when it is performing its work. It cannot be easily distracted by the environment whereas human tend to be emotional and get distracted by the surrounding. Apart from that, it is possible to apply robots in our daily life, reducing our burden and making our life easier.

In conjunction with the idea of making life easier, a table top cleaning robot is designed to clean tables automatically. Since the cleaning robot will perform cleaning process only on the table, therefore it must not fall from the table edge. It is equipped with four pairs of IR edge sensors and two wheels to avoid falling. Besides, it has to perform three types of cleaning processes. First, when the IR sensor of the robot detects any obstacle in front of it, it will stop and try to blow it off from the table. Then, the IR sensor will sense again to ensure that the obstacle is gone. If not, the second process will be performed. The Servo Robot Arm with Servo Gripper will try to catch the obstacle. Then, the robot will move forward until it reaches an edge and release it. Eventually if the Robot Arm still failed to catch the obstacle, meaning that the IR sensor still senses obstacle in front of it. Then, the third operation will be performed where the cleaning robot will use its body to push the obstacle to the very end of the table. If the robot couldn't push the obstacle due to its weight limit in a given delay time, it will stop immediately and announce that it fails to clean the table. In addition, the cleaning robot will continue to patrol the table after it has successfully clean the obstacle.

This project report begins with introduction of the background and objectives. Block diagrams and figures are used to provide better understanding of the overall system. Subsequently in the literature review, it describes the purpose of the main components used in the project. Apart from that, the methodology explains both hardware and software designs of the project and how they work perfectly among each other. Finally, there is some discussion after the results and outcome of the project and it will be concluded by a final conclusion.