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REPORT

DUST SWEEPER ROBOT WITH CONTROLLER

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ABSTRACT

This research represents the development of a robot that helps cleaning the floor that called as Dust Sweeper Robot with Controller which has been equipped with an advance control system. The robot system incorporates key components such as Arduino Uno, L293D Motor Driver Shield, HC-05 Bluetooth Module, DC Motor, Servo Motor and Water pump.

The real objective for the project is to design a very versatile cleaning robot which capable to do some efficient work of cleaning by sweeping and also mopping the dusty floor in any place at any time. The robot's mobility is facilitated by the integration of a 4 DC motor, controlled by the L293D motor driver shield, allowing the 2 DC motor for precise and agile movement. While the other 2 DC motor are employed to manipulate the sweeping mechanism, enabling targeted and adjustable cleaning angles.

To enhance user interaction and control, a wireless communication system is established using the HC-05 Bluetooth module. This allows users to remotely control the robot's movements and cleaning functions through a dedicated mobile application or Bluetooth-enabled device. The system's versatility is further extended with the incorporation of a water pump, enabling the robot to perform wet cleaning tasks, enhancing its efficacy in different cleaning scenarios.

The research details the design process, hardware configuration, and the development of the control algorithm governing the robot's movements. Experimental results demonstrate the effectiveness of the dust sweeper robot in efficiently cleaning diverse surfaces.

This study contributes to the field of robotics by presenting a comprehensive solution for automated cleaning tasks with the integration of intelligent control mechanisms. The proposed system showcases the potential of combining Arduino-based technology with various actuators and sensors to create a versatile and user-friendly cleaning robot. The insights gained from this research pave the way for further advancements in the domain of smart cleaning robotics.

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INTRODUCTION

1.1 Background Research

The 'Dust Sweeper Robot with Controller' is a home project designed to automate floor cleaning using a wireless controller, which is operated through a smartphone. The robot is equipped with two rotating mops located at the front and a foam roller at the back, serving the purpose of sweeping away dust and ensuring effective floor cleaning. To enhance its cleaning capabilities, the robot features a water pump that carries water, allowing the mops to dampen and clean the dusty floor efficiently. An interesting feature of this robot is the ability to lift the foam roller using the controller when it's not in use, adding to its convenience and user control. Overall, this project introduces a smart and automated solution for floor cleaning, making the process more efficient and user-friendly.

1.2 Motivation

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1.3 Problem Statement

People nowadays must do so many things at work and become busy doing the house chores. Especially in cleaning the floor. We can see a lot of dust and stains in many houses of busy working people. This happens because they were so lazy and tired of doing it. The process of cleaning the floor was troublesome because you need to sweep all the dust and then mop the floor until it clean.

In our fast-paced lives today, people often find themselves grappling with tight schedules and multiple responsibilities. Amidst these challenges, maintaining a clean and tidy home becomes a demanding task. While we have witnessed the advent of smart technologies, such as thermostats and lighting systems, there remains a notable gap in addressing the practical aspects of household chores.

The need for a solution is evident in the absence of a straightforward and efficient cleaning robot, complemented by an easily navigable controller. Without this technology, individuals are faced with the ongoing struggle of finding time to ensure their living spaces