(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :26/07/2023

(21) Application No.202341050324 A
(43) Publication Date : 01/09/2023

(54) Title of the invention : FABRICATION OF AI BASED FLOOR CLEANER ROBOT

(51) International classification :A47L0011400000, G05D0001020000, G06N0020000000, B25J0009160000, G06K0009620000
(86) International Application No :PCT// /
Filing Date :01/01/1900
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The fabrication of an AI-based floor cleaner robot represents a significant advancement in the field of home automation and robotics. This project aims to develop a sophisticated autonomous robot capable of efficiently cleaning various types of floor surfaces while utilizing artificial intelligence (AI) techniques. The robot's hard ware architecture consists of a sturdy and agile mobile platform equipped with sensors, actuators, and cleaning mechanisms. It employs a combination of cameras, lidar, and infrared sensors to perceive the environment, navigate obstacles, and identify dirty areas on the floor. Additionally, the robot is equipped with a tank for storing water or cleaning solution and a mechanism for dispensing it onto the floor. The intelligence of the robot is powered by AI algorithms, enabling it to analyze sensor data and make informed decisions in real-time. The AI system employs computer vision algorithms to identify dirt and stains on the floor, and it uses machine learning techniques to improve its cleaning performance over time. The robot's software is designed to adapt to different floor types and cleaning requirements, ensuring optimal cleaning efficiency and coverage. To ensure a seamless user experience, the robot is equipped with intuitive control interfaces such as voice commands and a mobile application. Users can schedule cleaning sessions, monitor the robot's progress, and customize cleaning preferences through the app. The robot also features advanced safety mechanisms, including obstacle detection and emergency stop capabilities, to prevent accidents and protect both the robot and the environment. The fabrication process involves designing and assembling the robot's hardware components, integrating the AI software system, and conducting rigorous testing to ensure optimal performance and reliability. The fabrication team collaborates closely with experts in robotics, AI, and human-computer interaction to refine the design and address any challenges that may arise during the development process. The AI-based floor cleaner robot represents a promising solution for automating household cleaning tasks. By combining advanced AI algorithms, robust hardware, and user-friendly interfaces, this robot offers a convenient and efficient cleaning experience while reducing the time and effort required for maintaining clean floors. The successful fabrication of this robot has the potential to revolutionize the way we approach floor cleaning in residential and commercial settings.

No. of Pages : 14 No. of Claims : 6