**AUTONOMOUS TOILET CLEANING ROBOT**

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**Abstract:**

This paper proposes an innovative solution to address the challenge of maintaining restroom cleanliness through the development of an IoT-based automatic restroom cleaning robot equipped with a gas sensor. Traditional restroom cleaning methods are often inefficient and labor - intensive, leading to inconsistent hygiene standards. By integrating IoT technology and a gas sensor into a robotic platform, this project aims to automate the cleaning process while also ensuring optimal air quality within the restroom environment. The robot will be capable of autonomously navigating through restroom spaces, detecting and removing dirt and debris, and identifying and neutralizing unpleasant odors using the gas sensor. Through real-time data monitoring and analysis, facility managers can remotely supervise the cleaning process, receive alerts for maintenance needs, and track cleanliness metrics, thereby enhancing efficiency, hygiene, and overall user satisfaction. The development of smart homes and environments has led to an increased demand for autonomous cleaning robots. The robot will be programmed to navigate autonomously within a designated environment, utilizing sensors to detect obstacles and clean targeted areas. The integrated gas sensor will enable the robot to identify and respond to the presence of specific gases, potentially including harmful pollutants or unpleasant odors. This real-time data can be transmitted via IoT protocols to a central hub or smartphone application, allowing users to monitor air quality and initiate targeted cleaning tasks. The proposed system has the potential to revolutionize home cleaning by offering an intelligent and automated solution that promotes cleanliness and a healthier indoor environment.

**Keywords:** Autonomous Robot, Toilet Cleaning, Sensor Fusion, Intelligent Control, Hygiene Maintenance.