A Perspective of Autonomous Office Trash Collector Robot: The Research and Development in Field Robotics

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Abstract

The proposed autonomous office Trash collection robot (AOTCR) aims to collect office waste and monitor the waste level and content of the smart office waste bin. Intelligent solutions for solving waste collection and disposal problems are sought after everywhere today. In the current situation of our lives, even hospitals/offices and even homes face many problems such as improper garbage collection and disposal. This problem is solved by introducing an autonomous office garbage collection robot (AOTCR). This robot is designed to collect office debris from the workplace or designated locations. The movement of the AOTCR is controlled by programming the Arduino in the robot operating system "ROS". This is a collection of ROS components (packages) with various features (mapping, map server, planning path, localization, etc.) that work together to enable autonomous robot navigation. The individual components communicate with each other via messages. Here, the Arduino UNO board is used as the central control unit, the ultrasonic sensor is used to monitor the garbage level in the smart trash can, and the sensor is used to provide the garbage content of the garbage. At the same time, the buzzer begins to sound, indicating that the bin is full and communicating with the server. Using this data, the AOTCR identifies bins that fill the floor/workstation and travel a single predefined path for the laser scan (rider) sensor. LIDAR sensors and ROS navigation help you return to the starting position after the centre of the garbage collection or landfill. This solution saves time and protects the office environment from pollution.

Keywords: ROS, Arduino UNO, Ultrasonic sensor, Lidar, Autonomous Robotics, Sensoring, Smart dustbin, Navigation

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prototype. This greatly reduces the need for arduous manual collection of solid medical or office/medical waste. The process of automatically creating things is harnessed in almost every major area of life. It provides safety and does not waste people's time and safety to prevent allergies and other diseases.

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