

ABSTRACT

Automation in robotics is a technology that allows for operation without human intervention. And this creates opportunities for reducing redundant tasks such as cleaning which is now more of a concern due to the pandemic and along this is the need for sanitation. This study focused on maximizing the use of robot vacuums, which are a preexisting technology, in producing a cost-effective product to sanitize hands as well and simultaneously perform both functions to maintain cleanliness in corridors.

The prototype went through four different tests to measure its performance and functionality. These tests were used to measure its mobility and navigation, vacuum suction, dispenser latency, and power supply longevity. Each test consists of several trials for different component variations and was measured through different scoring methods which were then analyzed and interpreted to identify if the prototype is functional and effective.

The ChRoVac prototype demonstrated the feasibility of integrating multiple functions and systems to create a Cheaper Robot Vacuum that will clean and sanitize corridors, but there are still areas for improvement as the data from the tests showed that its navigation is not consistent and there are still chances of the prototype being stuck while the vacuum suction mechanism demonstrated effectiveness in collecting lightweight and small garbage particles only and the alcohol dispenser mechanism on the other hand displayed better functionality in dark environments where natural sunlight was not present as it interferes with the IR proximity sensor in use. The researchers recommended investing in durable and modifiable materials, taking time to carefully position the wirings, strategically balancing the total weight of the materials and distributing it equally throughout the base of the vacuum, creating more backup functions, and using ultrasonic sensors instead of infrared ones.