

# Prototype of Mobile Robot Vacuum Cleaner

## Based on Microcontroller

Jacqueline Morlav S. Waworundeng, Charlie

Deeng and Gerald Richi Deeng

Computer Science Faculty, Universitas Manado, Indonesia;  
jacqueline.morlav@unklab.ac.id

**Abstract:** Cleanliness is important because it can affect the health of its inhabitants. Cleaning the dust on the floor manually use broom or vacuum cleaner. Vacuum cleaner is tools that vacuuming the dust with direct control of user. This research presents simple prototype of mobile robot vacuum cleaner that can operate automatically by vacuuming the dust on flat floor surface. Prototype is built with three ultrasonic sensors that can detect and avoid obstacles surround. Prototyping Model is used as a basic method. Arduino IDE with C programming language are used to create program code for microcontroller. Hardware build in microcontroller Arduino Uno board, mini vacuum cleaner, ultrasonic sensor for sensing obstacles, voltage sensor, Lithium Polymer (LiPo) battery as the power source, motor DC to spin wheels and perform robot locomotion, LCD to display battery level, module timer to set operation time of robot, and Buzzer alarm to notify when the battery power running low. The results of this research is a physical prototype of mobile robot vacuum cleaner embed with simple locomotion algorithm, which detect and avoid obstacle also to perform main function to absorb dust.

**Keywords:** Mobile robot, vacuum cleaner, microcontroller, Arduino, ultrasonic sensor