

# ROBOT CONTROLLED VACUUM CLEANER

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## **ABSTRACT**

Hygiene is one of the most important factors in our life. Nobody wants to live in dirty places. Islam encouraged maintaining self- cleanliness and places where they live. Dust and dirt holds dust mite which can provoke asthma and allergy, especially in childhood. Regular use of vacuum cleaner will mop up those little dirt devils, and reduce the breeding cycle. However, in certain places such as mosque and prayer room which are enormously large, it takes quite a long time to clean the dust and dirt of the entire room. Thus, by building a robot controlled vacuum cleaner it can replace the conventional vacuum cleaner. This type of cleaner robot is able to clean these places without having to be manned. The robot controlled vacuum cleaner is built using microcontroller, motor driver circuit and sensors circuit. The microcontroller or Peripheral Interface Controller used in this project is PIC16F84A. The microcontroller coordinates the robot operations; it collects data from the sensors, runs a multi-tasking operation system, runs the consumption program and controls the stepper motor. The controller software for the system was developed using AutoCAD and MPLAB IDE software.

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.0 Introduction**

The robot controlled vacuum cleaner prototype is able to vacuum and clean prayer room, mosque and other places is no a trivial challenge. The sensor system is an important part of the robot as it provides information about the environment. The better adapted and the more reliable this system is the easier the programming of the robot will be. Furthermore, the robot's behavior can only be as good as its sensor system. The robot interprets data returned by the sensor about the environment and is able to make decisions accordingly. The micro controller controls all of the operations of the robot, from collecting sensor data to carrying out appropriate actions. The memory holds the operating system and sensor data. The program describes a set of rules for the robot to follow. This tells the micro controller how often to sample the sensors, what to do base on the current state of the sensors, and how to implement actions through the output devices. This complement consists of two stepper motors. The robot interacts with is surroundings using these devices.

The micro controller (PIC16F84A) and the memory (PIC16F84A) compose the computational hardware of the system. The micro controller coordinates all of the robot's operations; it collects data from the sensors, performs analog-to-digital (A/D) conversions, runs a multi-tasking to operating system, runs the consumption program, and controls the stepper motors. PIC16F84A is a widely used micro controller that is flexible enough for variety of applications. PIC16F84A is the logical choice for these particular applications with its 2 bytes of the program memory, 128 bytes in the data EEPROM, 224 bytes data memory. So we use PIC16F84A to store the operating system, the program, and all pertinent information that the robot needs o function.