



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**CONTROLLING VACUUM TECHNOLOGY BY USING
ANDROID AND BLUETOOTH DEVICE**

This report is submitted in accordance with the requirement of the University
Technical Malaysia Melaka (UTeM) for the Bachelor of Electronics Engineering
Technology (Telecommunication) With Honours

by

NURUL AMIRA BINTI MOHAMED

B071310055

900109-01-6318

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I hereby, declared this report entitled Controlling Vacuum Technology by Using Android and Bluetooth Device is the results of my own research except as cited in references

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Date :

APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as a partial fulfilment of the requirements for the degree of Bachelor of Electronics Engineering Technology (Telecommunications) with Honours. The member of the supervisory is as follow:

.....
(Project Supervisor)

ABSTRAK

Di zaman era teknologi ini, telefon pintar merupakan keperluan manusia di dalam hidup ini. Malahan telefon pintar mempunyai pelbagai fungsi yang boleh digunakan untuk memudahkan kehidupan manusia. Kelebihan yang ada pada telefon pintar ialah mempunyai alat *Bluetooth* yang boleh digunakan untuk menghantar data bahkan alat *Bluetooth* boleh dijadikan alat mudah alih yang digunakan untuk kehidupan harian manusia. Pada zaman ini, kehidupan manusia kini selalu sibuk dengan kerja di pejabat atau rutin harian sehingga kepenatan untuk membersihkan rumah. Dalam situasi ini, manusia akan selalu memikirkan cara untuk menjimatkan masa untuk membersihkan rumah. Berdasarkan pemerhatian, terdapat pelbagai jenis vakum yang telah dicipta untuk proses pembersihan. Kepentingan projek ini dicipta untuk adalah penciptaan inovasi yang dikawal dari telefon pintar dengan menggunakan aplikasi Android dan alat *Bluetooth*. Mengawal teknologi vakum dengan menggunakan Android dan alat *Bluetooth* adalah projek yang dicipta untuk berfungsi sebagai pembersih vakum. Projek ini menggunakan Arduino untuk mengawal semua pergerakan vakum sama ada bergerak secara ke hadapan, ke belakang, ke kiri atau ke kanan. Projek ini menggunakan alat *Bluetooth* untuk penghantaran data dari alat pintar ke Arduino untuk proses pembersihan.

ABSTRACT

In this technology era, the smartphone is a human need in this life. In fact, multi-functional smart phones that can be used to facilitate human life. Advantages that have on a smartphone is a Bluetooth device that can be used to transmit data and Bluetooth device is can be portable device that used in human daily life. Now days, human life is always busy with work in the office or daily routine and make they tried to do cleaning in the house. In this situation, people will always think of ways to save time to clean house. Based on these observations, there are various types of vacuum that has been created for the cleaning process. The importance of this project is the innovation designed for the control of smartphones using Android applications and Bluetooth device. Vacuum technology controls using Android and Bluetooth is a project created for serve as a vacuum. The project uses an Arduino to control all movement of vacuum either move to forward, backwards, left or right. In this project, it use Bluetooth device that function as receiver from the smartphone to vacuum for cleaning process

DEDICATION

Special thanks go to

*My beloved family members who always there for me, my friends who gives assistant,
and also to my supervisor who give guidance through the hardships*

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ALHAMDULILLAH, all praises to God the Almighty for He who give me strength and spirit to complete this final year project. I would like to express my gratitude to all people who give even the littlest contribution and help me throughout my entire project. Without those helps, I doubt my project will be as successful as it is now. First and foremost, my deepest appreciation to my supervisor, Mr. Abdul Halim Bin Dahalan for his guidance and knowledge which helped me during two semesters of doing this project. This challenging project comes from our idea together. He is always there for me to supervise me throughout two semesters. I would like to thank my beloved parents for their love and support in which I become a motivated person as to finish this final year project of mine. With their constant prayers and cheers, I become stronger to complete this thesis.. Lastly, my greatest gratitude goes to all my friends who helped me by sharing knowledge as well as lending some equipment for me to finish this project. I cannot do this project alone without any help from all of you. Thank you.

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LIST OF ABBREVIATIONS

HAS	-	Home Automation System
IJSER	-	International Journal of Scientific Engineering and Research
IJES	-	International Journal of Engineering and Science
PAN	-	Personal area networks
UHF	-	Ultra high frequency
ISM	-	Industrial, scientific and medical
DC	-	Direct current
IDE	-	Integrated Development Environment
RAM	-	Random access memory
ROM	-	Read only memory
AI	-	App Inventor

CHAPTER 1

INTRODUCTION

1.0 OVERVIEW

These days, Smartphones are becoming more powerful with larger storage capacities, more entertainment function and more communication methods. Besides that the Bluetooth device is mainly used for data exchange and a host Bluetooth device its capable of communicating with up to seven Bluetooth modules at same time through one link. The Bluetooth technology is a dramatic increase in Smartphone users and smart phones have gradually turned into an all purpose portable device and provided people for their daily use. In addition, an Android has a complete software package consisting of an operating system that have middleware layer and core applications.

Multiple type of vacuum has been created to facilitate people to be able to keep the house clean. The importance of this project is affordable to the public the results of innovations designed that can control based on a Smartphone with use Android application and Bluetooth device. Controlling vacuum technology by using Android and Bluetooth device is a project that serves as a vacuum cleaner, which operates by using technology based an Arduino software and Android application.

In fact, in terms of electricity consumption, it is very economical. Technology nowadays has facilitated people to do cleaning work without requiring a lot of manpower and it is safe with.

1.1 PROBLEM STATEMENT

Now days, people are very busy rushing with their work and it can effect for their environment at the house. To overcome this problem, controlling the vacuum was created to clean the dust and garbage on the floor of the house without requiring a lot of manpower. So, it makes easier for people because it can save time people to do multiple jobs at the same time. Besides that, it provides comfort for family in a clean environment. Controlling vacuum technology by using Android and Bluetooth device it used for cleaner the dust that can use for the housewife

Thus, everyone can enjoy the cleanliness and comfort, especially in the home. This project is a function as a vacuum cleaner, which operates controlling using an Android application with a Bluetooth device.

1.2 OBJECTIVE

The subsequent show the main objectives of this project:

1. To study about controlling vacuum with using Android and Bluetooth device
2. To develop software that used in this project
3. To analyse the performance of movement vacuums to control it with Smartphone.

1.3 PROJECT SCOPE

This project is for controlling vacuum technology by using android and Bluetooth device that easier used to the housewife. This vacuum is used inhale dust bins or small with controlling movement using a smartphone.

In addition by using an android application controlled robot communicates via Bluetooth Smartphone to the Bluetooth device. It will responding when pressing each button on the application in Smartphone then the corresponding commands are sent via Bluetooth to the vacuum. The Arduino on this project then process the command received with controls the servo motors depending based on the command received to cause it to move forward, backward, left and right. Then, to stop the vacuum the button off was presseed or button on to vacuum be functional.

Thus, allowing providing android software that controlled a vacuum. This vacuum technology is suitable for everyone to enjoy the cleanliness and comfort, especially in the home or in the office. Besides that, this vacuum technology is safe to use and suitable for all levels of society with environmentally friendly

1.4 REPORT OVERVIEW

A controlling vacuum technology by using Android and Bluetooth device will be developed in a way to provide a vacuum technology that suitable to use for all levels of society with environmentally friendly. Then, this project can share all information anytime follow to the schedule.

CHAPTER 2

LITERATURE REVIEW

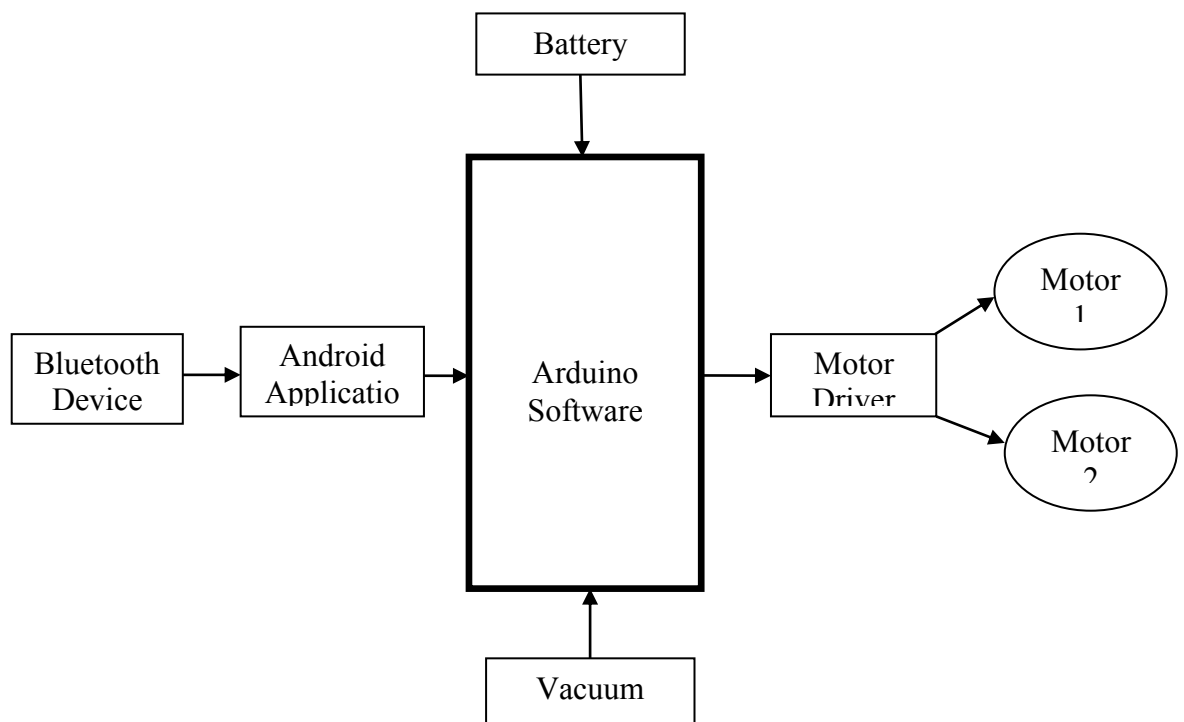
2.0 INTRODUCTION

This chapter explains about all theory or writing that related to project field that will be conducted is a need to get background information also help students in achieving all objective. In this paper will focus on the application and function that will be used in this project. From the observation, there are many innovations that have been found and. Besides that, this is to learn and study the implementation software that used in this project. Several of reading element such as book, thesis, journal, internet and article was refer to make sure understand about concept and information that needed to ease implementation something project.

The most important element in the Controlling vacuum technology by using Android and Bluetooth device that used to can clean the dust and garbage on the floor of the house without requiring a lot of manpower and it is safe to use. In addition, it uses the Android application to determine the direction movement. Thus, everyone can enjoy the cleanliness and comfort, especially in the home or in the office. This project is a function as a vacuum cleaner, which operates using Arduino software.

2.1 OVERVIEW CONTROLLING VACUUM TECHNOLOGY BY USING ANDROID AND BLUETOOTH DEVICE

The controlling vacuum technology by using Android and Bluetooth device is the project that using for developing Arduino software. This project also uses one technique that combination between the Arduino software that function as main programming with connected used Bluetooth device for Android application to control the movement of the vacuum. A basic technique of the block diagram for controlling vacuum technology by using Android and Bluetooth device was shown in figure 2-2 as below :



. Figure 2-1: A basic technique of the block diagram

2.2 RELATED PROJECTS

There are a lot of searches about the vacuum that produce by different people and different organizations. Addressing these sections one by one before identifying the proper type of search related to the project are necessary.

Cleaning Robot By Nikita Prashar, T ejashree Thorat, A bhishek Galande &R itesh Durande, Global journal of computer science and technology explained the designed a new service robot that used for cleaning home. This robot is detect obstacle and its direction as the input by using a microcontroller that was programmed to sense the obstacle and control the robot to avoid any collision. Otherwise, from the ceiling of the room it used a camera which it can complete view of the floor. Then, the PC display the image of the floor that was transmitted from the camera. In addition, this vacuum cleaner was designed as a robot to perform the cleaning process. (Nikita Prashar, T ejashree Thorat, A bhishek Galande &R itesh Durande, February 2012).

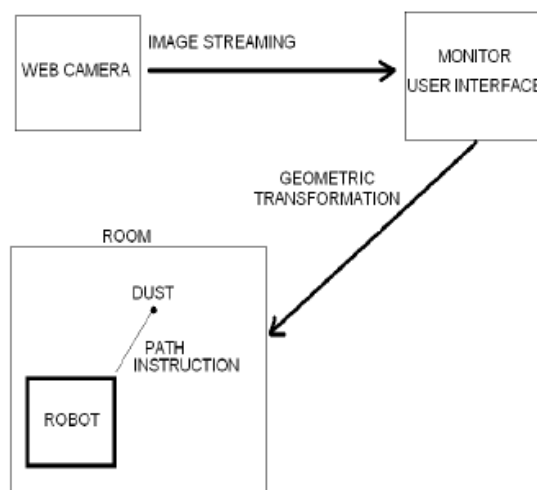


Figure 2-2-1: Concept of house cleaning.

(Source: Nikita Prashar, T ejashree Thorat, A bhishek Galande &R itesh Durande, February 2012)

Android and Bluetooth Technology Enabled Remote Control Using A Smart Phone by M. Puthanial, S.Rajeshwari, Dr. P.C.Kishore Raja, Dr. P.Shankar, International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering based on (An ISO 3297: 2007 Certified Organization) Vol. 3, Issue 5, May 2014 explained that used a smartphone for controlling a universal remote control via Bluetooth. In this project it was a combination of Android and Bluetooth in this smartphone technology. This project uses a remote control in the smartphone that provide simple user interface that can have seen in many universal remote controls. As usual, the device is control with used the manual operation to appliance for switch ON/OFF the device. So, this application is developed in smart phone through bluetooth for controlling appliance. This elements used that trendy microcontroller has commonly been PIC 16F877 for controlling the remote control. (M. Puthanial, S.Rajeshwari, Dr. P.C.Kishore Raja, Dr. P.Shankar, May 2014).

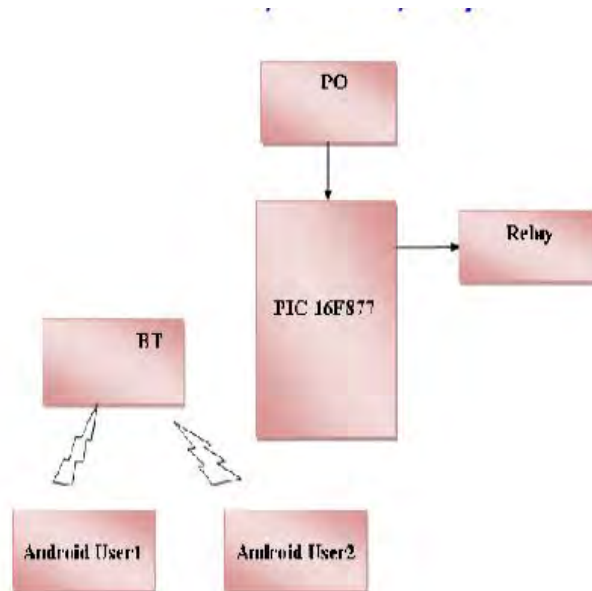


Figure 2-2-2: Block diagram

(Source: M. Puthanial, S.Rajeshwari, Dr. P.C.Kishore Raja, Dr. P.Shankar, May 2014)



Figure 2-2-3: Application design of the universal remote
 (Source: M. Puthanial, S.Rajeshwari, Dr. P.C.Kishore Raja, Dr. P.Shankar,
 May 2014)

Smart phone based robotic control for surveillance applications by M.Selvam, International Journal of Research in Engineering and Technology explained that can appliance this robot at the sector in manufacturing. This robot is ability to modify for changes of needs that was designed to develop a robotic vehicle using android application is functioning as remote operation that attached with wireless camera for monitoring purpose. This project is for controlling movement of a robot with using embedded 8051 microcontroller by android technology through smart phone. Another else, is to performance by adding more features and developments at the wide area. It is only to control an embedded robotic hardware and performance by adding more features and development at the wide area. (M.Selvam).

Android Mobile Phone Controlled Bluetooth Robot Using 8051 Microcontroller by Ritika Pahuja, Narender Kumar, International Journal of Scientific Engineering and Research (IJSER) was explained by using an electro-mechanical machine that know as a robot is guided by computer and electronic programming. This robot is developing the remote control buttons in the Android application that can control the motion of robot with use Bluetooth communication to interface controller and android. It was a review of current robots controlled by mobile phone and the android application such as an Arduino Bluetooth RC car to

move the robot upward, backward, left and right side. It used 89c2051 microcontroller for controlling device the whole system. (Ritika Pahuja, Narender Kumar, July 2014).

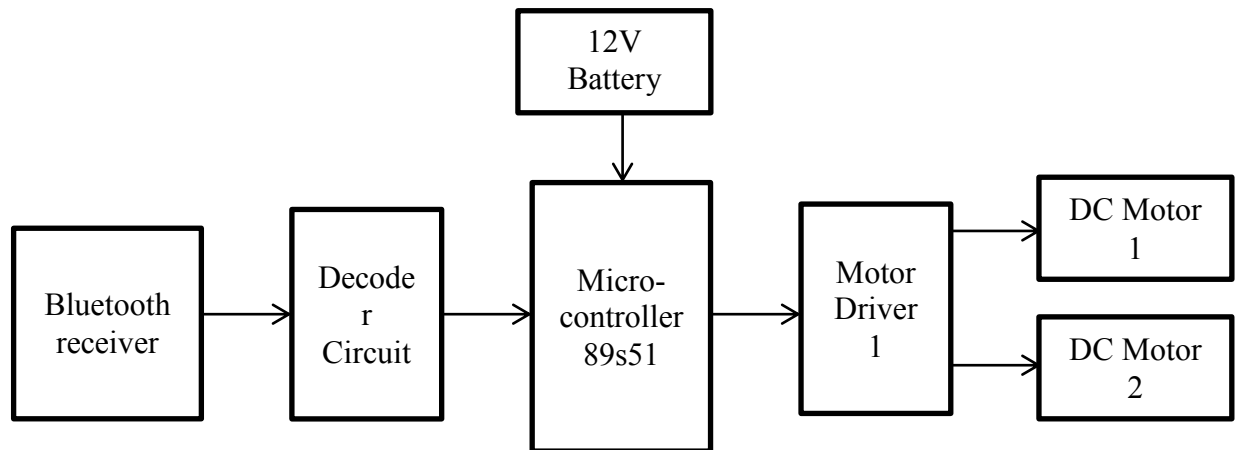


Figure 2-2-4: Block diagram of android smart phone controller Bluetooth robot using 89s51 microcontroller

(Source: Ritika Pahuja, Narender Kumar, July 2014)

A technology survey on autonomous home cleaning robot by Abhishek Pandey, Anirudli Kaushik, Amit Kumar Jha, Girish Kapse, Dept. Of Electronics and Telecommunication, Army Institute of Technology, International Journal of Scientific and Research Publication was explained about the house cleaning robot that automatic systems to clean on its own without human investigation. Besides that, with using a microcontroller to detect obstacles and manipulates its direction by the infrared sensor that places at in front , right and left of the cleaning robot. Another else, it can use auto mode that microcontroller was programmed to make decision and changes the path of the robot that have sensor input to avoid the obstacle indeed is used a timer to set the limit for cleaning process.(Abhishek Pandey, Anirudli Kaushik, Amit Kumar Jha, Girish Kapse, April 2014).