CHAPTER 1

INTRODUCTION

1.1 Project Background

In many industries, a device that used in order to convert electrical energy into mechanical energy is called as the direct current (DC) motor. All result is from the availability of speed controllers which is wide range, easily and many ways. Speed control is very important in most applications, which is for an example, if we have DC motor in radio controller car, if we just apply a constant power to the motor, it is impossible to maintain the desired speed. It will go slower over rocky road, slower uphill, faster downhill and so on. It is important to make a controller to control the speed of DC motor in desired speed. In modern industry, DC motor plays a significant role.

Speed control of dc motor could be achieved using mechanical or electrical techniques. In the past, speed controls of dc drives are mostly mechanical. Requiring large size hardware to implement. Advances in the area of power electronics have brought a total revolution in the speed control of dc drives. This development has launched these drives back to a position of formidable relevance, which were hitherto predicted to give way to ac drives. These drives have now dominated the area of variable speed because of their low cost, reliability and simple control.
To take a signal representing the demanded speed, and to drive a motor at that speed is the purpose of a motor speed controller. There are numerous applications where control of speed is required, as in rolling mills, cranes, hoists, elevators, machine tools, transit system and locomotive drives. These applications may demand high-speed control accuracy and good dynamic responses.

DC motor is widely used in metallurgy, machinery manufacturing and light industry because of its good performance in starting and breaking and its easily controlled speed regulation. In recent years, with the development of the power electronic technology, the thyristor rectifier is commonly used for the power supply of the DC motor, which replaces the AC motor—DC generator power supply system. But DC motor speed control system is a complex multivariable nonlinear control system, because the various parameters influence each other, its anti-interference ability is weak and it’s not suitable for high control performance occasion.

Therefore, in order to enhance DC motor speed control system of anti-jamming and robustness, and improve the response speed and stable precision of the speed regulation system, this paper discuss the PWM DC motor speed control system based on the fuzzy control and neural network control.

In conclusion, in devices ranging from toys, house appliance and robotics to industrial application, the simplicity of control speed made DC motors to be common.
1.2 **Objective of the Project**

Basically, these projects are having three main objectives. The objectives are a guideline and goal in order to complete this project. This project is conducted to achieve the following objectives:

I. To develop controller using microcontroller as programming.

II. To design the hardware of the controller to control DC motor frequency.

III. To develop precisely control the DC motor.

1.3 **Scope of the Project**

There are two scopes in this project which is hardware development and software development. For the first scope which is hardware development there are three main section. First are to design a circuit that can integrate with MicroController, nest is to design a circuit for control speed of DC motor, and lastly for to design a circuit for the motor driver.

While For the second scope which is the software development, there are two main sections and that section are. Firstly try to simulate the control system using Multisim software, next develop a software or coding and integrate with Arduino uno.