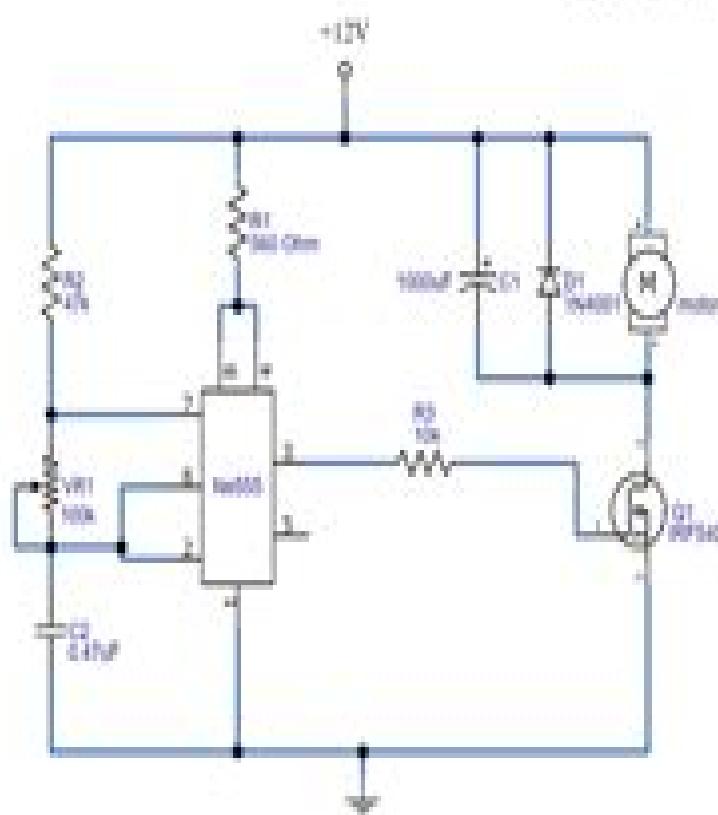


# DC Motor Speed Control using IC 555



# Dc Motor Speed Control

**James R. Leigh**

## Dc Motor Speed Control:

**DC Motors, Speed Controls, Servo Systems** Sam Stuart,2013-10-22 DC Motors Speed Controls Servo Systems An Engineering Handbook is a seven chapter text that covers the basic concept principles and applications of DC and speed motors and servo systems After providing the terminology symbols and systems of units this book goes on dealing with the basic theory motor comparison and basic speed control methods of motors The subsequent chapters describe the phase locked servo systems and their optimization and applications These topics are followed by a discussion of the developments made by Electro Craft in the field of DC Brushless Motors The final chapter provides revised data sheets on Electro Craft products and describes the models in the motomatic range of speed controls servomotor controls and digital positioning systems This handbook is of great value to professional engineers and engineering students

*Adjustable Closed-loop DC Motor Speed Controller* Nurul Atikah Nasir,2012 The speed control of DC motors is very crucial in applications where the importance of precision and protection Purpose of a motor speed controller is to take a signal representing the required speed and to drive a motor at that speed Micro controller can provide easy control of DC motor This project is about speed control system of DC motor by using micro controller and it is a closed loop control system Pulse Width Modulation PWM technique is used where its signal is generated in microcontroller which is the signal will send to motor driver to vary the voltage supply to control motor speed

DC Motor Speed Control with the Precence of Input Disturbance using Neural Network Based Model Reference and Predictive Controllers Mustefa Jibril,2020-05-11 Academic Paper from the year 2020 in the subject Computer Science Miscellaneous language English abstract In this paper we describe a technical system for DC motor speed control The speed of DC motor is controlled using Neural Network Based Model Reference and Predictive controllers with the use of Matlab Simulink The analysis of the DC motor is done with and without input side Torque disturbance input and the simulation results obtained by comparing the desired and actual speed of the DC motor using random reference and sinusoidal speed inputs for the DC motor with Model Reference and Predictive controllers The DC motor with Model Reference controller shows almost the actual speed is the same as the desired speed with a good performance than the DC motor with Predictive controller for the system with and without input side disturbance Finally the comparative simulation result prove the effectiveness of the DC motor with Model Reference controller

Digital DC Motor Speed Control System Brian E. Goodrich,Purdue University Calumet. Electrical Engineering Technology Department,1994

**Speed Control of Dc Motor Using Pwm Technique** Surajit Das Barman,Abrar Hussain,Toufiq Ahmed,2012-06 Direct current DC motors have variable characteristics and are used extensively in variable speed drives DC motor can provide a high starting torque and it is also possible to obtain speed control over wide range Why do we need a speed motor controller For example if we have a DC motor in a robot if we just apply a constant power to each motor on a robot then the poor robot will never be able to maintain a steady speed It will go slower over carpet faster over smooth flooring slower up hill faster

down hill etc So it is important to make a controller to control the speed of DC motor in desired speed DC motor plays a significant role in modern industrial These are several types of applications where the load on the DC motor varies over a speed range These applications may demand high speed control accuracy and good dynamic responses In home applications washers dryers and compressors are good example In automotive fuel pump control electronic steering control engine control and electric vehicle control are good examples of these In aerospace there are a number of applications like centrifuges pumps robotic arm controls gyroscope controls and so on

DC Motor Speed Control Using a Phase-locked Loop Erik Nelson,1975

DC Motor Speed Control with PWM ,2015

Development of Control Shceme for DC Motor

Speed Control Applications Siti Nurnadirah Ahmad Latfi,2010 Nowadays DC motors plays a vital role in most of the industrial areas it can be seen in most of the electronic devices The purpose of a motor speed controller is to take a signal representing the demanded speed and to drive a motor at that speed In this project the power converter for DC motor application is developed One of the most common methods is by using PWM wave to control the speed of the motor Therefore to provide the required power to the motor SPMS is used to supply the DC motor from AC power supply Rectifier which converted AC DC and buck converter are combined which output can be supplied to the DC motor The SMPS which supplies the DC motor is developed and the output is controlled by using PWM TL494 is used to generate the PWM wave which can be varied in duty ratio In the end of this project the motor speed will satisfied the desired speed control as expected

PC Based DC Motor Speed Control Mohamad Azizi Omar,2008 The purpose of this study is in electronic scope to design a DC speed controller circuit controlled by computer as a GUI Graphical User Interface from minimum to maximum speed This project is

focus on the DC motor speed control by varying the duty cycle of Pulse With Modulation PWM signal via Computer PC Nowadays the computers are widely used in daily applications as a graphical user interface GUI because it is easy to monitoring save cost and time In this project PC used to generate PWM signals assisted by Microsoft Visual Basics software thus reduced hardware implementation in a system PWM speed control is desirable due to its high power efficiency compare with another method of speed control like frequency control current and voltage control The motor averages the input duty cycle into a constant speed which is directly proportional to the percent duty cycle The Software send PWM signal to the driver circuit through the RS232 serial port The driver circuit will boosted the PWM signal to drive the MOSFET and thus control the motor The speed of DC motor is depending on the spectrum of PWM that refer to their duty cycle This project was able to control the motor speed via PC from zero to maximum speed which is most important feature in industrials control applications

DC Motor Speed Controller Mohd Amir Fikri Awang,2010 The automatic control has played a vital role in the advance of engineering and science Nowadays in industries the control of direct current DC motor is a common practice thus the implementation of DC motor of controller speed is important The main purpose of motor speed control is to keep the rotation of the motor at the preset speed and to drive a system at the demanded speed When used in speed application speed

feedback control the DC motor's speed or confirms that the motor is rotating at the desired speed. To maintain the speed it requires the speed feedback at all times. The speed of a DC motor usually is directly proportional to the supply voltage. For instance, if we reduce the supply voltage from 12 Volts to 6 Volts, the motor will run at half or lower the speed. The advantages used DC motor is provide excellent speed control for acceleration and deceleration with effective and simple torque control. The fact that the power supply of a DC motor connects directly to the field of the motor allows for precise voltage control which is necessary with speed and torque control applications. The common methods are used to control speed DC motor is Proportional Integral Derivative PID and PC based to control it. In this project the method used as controller is Programmable Interface Controller PIC microcontroller for the electric current control to drive a motor. The expectation of this project is to get the precise the demanded speed and to drive a motor at that speed. **Comparison of DC Motor Speed Control**

**Performance using Fuzzy Logic and Model Predictive Control Method** Mustefa Jibril, 2020-05-11 Academic Paper from the year 2020 in the subject Computer Science Miscellaneous language English abstract The main target of this paper is to control the speed of DC motor by comparing the actual and the desired speed set point. The DC motor is designed using Fuzzy logic and MPC controllers. The comparison is made between the proposed controllers for the control target speed of the DC motor using square and white noise desired input signals with the help of Matlab Simulink software. It has been realized that the design based on the fuzzy logic controller track the set point with the best steady state and transient system behavior than the design with MPC controller. Finally the comparative simulation result prove the effectiveness of the DC motor with fuzzy logic controller. **DC Motor Speed Control Using SCR Chopper** John Y. H. Chen, 1977

**Experiments in Solid-state D.C. Motor Speed Control** Raymond John Bukszar, 1973 **Solid State DC Motor Speed Control with Adjustment Acceleration** Wan Bakree Mohd Ramli, 1988 **An Input-output Approach to Series DC Motor Speed Control**, 1999 **DC Motor Speed Control with PID Control Using Visual Basic** Shin Horng Chong, 2001

**Speed Control of Sensorless Brushless DC Motor** MD Sabbir Ahmed, 2018-11-22 This book is all about running a brushless DC motor using a sensorless technique. The target of the work was to make a very simple operating method for a brushless motor and formulate a speed control mechanism. Initially the work was started with both considering back EMF and without considering back EMF. Because of more complexity in the back EMF sensing method and as our intention was to make a simpler and cost effective operation so finally we assembled our project the without back EMF sensing. Even though being a simple and inexpensive machine the performance was quite good. However adding back EMF sensing in this machine can give it more dependability.

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McGarvey,1965 **Applied Control Theory** James R. Leigh,1987 This second edition includes new material and supporting references on robotics control programmable logic controllers self tuning controllers distributed computer control systems and biotechnological control *DC Motor Control - A case study* MOHAMMED ASLAM HUSAIN,2018-11-20 In this book the four quadrant speed control system for DC motor has been studied and constructed To achieve speed control an electronic technique called pulse width modulation is used which generates high and low pulses These pulses vary in the speed of the engine For the generation of these pulses a microcontroller is used It is a periodic change in the program Different speed grades and the direction are depended on different buttons The experiment has proved that this system is higher performance Speed control of a machine is the most vital and important part of any industrial organization This paper is designed to develop a four quad speed control system for a DC motor using microcontroller The engine is operated in four quadrants ie clockwise counterclockwise forward brake and reverse brake It also has a feature of speed control The four quadrant operation of the dc engine is best suited for industries where engines are used and as a requirement they can rotate in clockwise counter clockwise and thus apply brakes immediately in both the directions In the case of a specific operation in an industrial environment the engine needs to be stopped immediately In this scenario this system is very integral The PWM pulses generated by the microcontroller are instantaneous in both directions and as a result of applying the PWM pulses The microcontroller used in this project is from 8051 family Push buttons are provided for the operation of

the motor which are interfaced to the microcontroller that provides an input signal to it and controls the speed of the engine through a motor driver IC The speed and direction of DC motor has been observed on digital CRO

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