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SPEED CONTROL OF DC MOTOR USING ANDROID APPLICATION AND RF

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Abstract

The speed of DC motor is directly proportional to the voltage applied across its terminals. Hence, if voltage across motor terminal is varied, then speed can also be varied. This project uses the above principle to control the speed of the motor by varying the duty cycle of the pulse applied to it (popularly known as PWM control). The project is designed to control the speed of a DC motor using an 8051 series microcontroller with android application device and RF remote. Remote operation is achieved by any smart-phone/Tablet etc., with Android OS, upon a GUI (Graphical User Interface) based touch screen operation. The project uses Bluetooth device, interfaced to the microcontroller, which are used to control the speed of motor. PWM (Pulse Width Modulation) is generated at the output by the microcontroller as per the program. The program can be written in Assembly language or in Embedded C. The average voltage given or the average current flowing through the motor will change depending on the duty cycle (ON and OFF time of the pulses), so the speed of the motor will change. A motor driver IC is interfaced to the microcontroller for receiving PWM signals and delivering desired output for speed control of a small DC motor. Further the project can be enhanced by using power electronic devices such as IGBTs to achieve speed control higher capacity industrial motors.

Keywords: **Pulse Width Modulation (PWM), DC Motor, Microcontroller**

INTRODUCTION

Every system is automated in order to face new challenges in the present day situation. Automated systems have less manual operations, so that the flexibility, reliabilities are high and accurate. Hence every field prefers automated control systems. Especially in the field of electronics automated systems are doing better performance.

RF CONTROL

The goal of the project is to develop a system, which uses RF communication to control the speed of dc motor without any wired communication, which executes with respect to the signal sent by the RF TX. There are several applications with dc motors in our daily life. Obviously there exists many applications where there might be a need to control the speed of dc motors. There exist many ways of controlling the speed of DC motor. Of the available ones, PWM technique is the most efficient one and the same technique is used here in this project.

According to this project the person who wants to control the speed of DC motor from a distant place using RF TX. By pressing the keys available at the RF TX the speed of the DC motor is varied by making use of the PWM technique. This is realized with the help of microcontroller.

ANDROID DEVICE CONTROL

The intention of this project is to develop a speed-control system for a DC motor that changes the magnitude of the voltage applied to an armature using an Android-application device. The speed of the DC motor is directly proportional to the voltage applied across its terminals. Hence, if the voltage across the motor terminal is varied, then the speed can also be varied.

ICONRER-2021

Renewable energy and sustainable development are the key technologies to offer solutions to the ever-increasing environmental pollutions and depleting conventional fuel reserves. With an aim to discuss the state of art technologies pertaining to the renewable energy domain, RTU (ATU) TEQIP III Sponsored 3rd International Conference on New and Renewable Energy Resources for Sustainable Future (ICONRER-2021) was organized by the Department of Mechanical Engineering, Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur in collaboration with Rajasthan Technical University and Department of Mechanical Engineering, Assiut University, Assiut (Egypt) from February 11 to 13, 2021. ICONRER is a series of the conference started in 2017 and it was 3rd event of that series.

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