Abstract

Most laboratory instruments to teach digital control systems are expensive to afford and not easily available especially in developing countries. In addition to this, even in developed countries, they are not open for basic exercising. This paper proposes a solution to this problem. It shows how to teach the fundamentals of digital control without using hardwares. It solves this problem by using Closed Loop Speed Control System of DC Motor on Proteus VSM (Vertual System Modelling) software. The encoder pulses are used to measure the speed of the motor. A PI controller is developed based on the dynamic model of the Proteus DC motor. The PWM which is produced depending on the error and the PI control algorithm is input to L298 H bridge IC to drive the motor. The processor used is arduino uno board (ATmega328P) which is simple to program and has many libraries. The speed time response of the Proteus VSM motor is plotted using MATLAB. The communication between MATLAB and Proteus VSM arduino is realized using virtual serial communication.
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**Index Terms**

Computer Science                     Control Systems

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**Keywords**

Arduino, ATmega328P, DC motor, Teaching Digital control, PWM speed control, Proteus simulation, speed control