

## **SPEED CONTROL OF PM STEP MOTORIZED CARRIAGE USING FUZZY LOGIC CONTROL (FLC)**

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### **Abstract**

For speed control of stepper motors, usually open loop methods of control are used. In this paper, control scheme which controls the speed in closed loop mode is presented. The controller which controls the speed in closed loop mode is fuzzy controller (FC). The basic control function makes use of atmospheric parameters such as temperature and light. The light dependent resistor sensor (LDR) and temperature sensor (TS) and ultra sonic sensor (US) are activated by a light source and heating elements and obstacle respectively which are provided to data acquisition system (DAS) in the amplified version. The data acquisition system simply acts as analog to digital (A/D) converter from which the digital data goes to the fuzzy software routine (FSR). The software routine process the data by using information in stored profiles. By considering the maxima and minima, final diagram is obtained. The coordinates of this diagram are used for centroid calculations, this calculated centroid is then used as input to software written for controlling the speed of motor. The software has facility to drive the motor in anticlockwise direction depending upon the steps given to the software. The speed is controlled by centroid which acts as a delay in the speed control software.

The speed is a direct function of centroid and varies according to temperature, light & ultra sonic sensor inputs.

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**Keywords:** Fuzzy Controller (FC), Light Dependent Resistor (LDR) Sensor, Temperature Sensor (TS), Ultra Sonic Sensor (US), Data Acquisition System (DAS), Analog to Digital (A/D) Converter, Fuzzy Software Routine (FSR).