BLDC Motor Speed Control Using Fuzzy Logic

This system accurately controls BLDC motor speed using fuzzy logic. The system uses an 8051 family microcontroller to achieve this purpose.

We here constantly monitor the motor speed using an IR sensor. The sensor is used to keep track of the fan motor rotation and measure its RPM.

The sensor is interfaced with the microcontroller and provides input to the microcontroller. The microcontroller then calculates motor speeds based on signals provided by the sensor.

The microcontroller is also interfaced with an LCD display to display the status of the system along with motor speed. The project uses fuzzy logic to increase and decrease PWM supply based on the fan speed monitored to keep it spinning very close to the desired speed.

Thus microcontroller constantly supplies PWM pulses to keep the motor running around the desired speed as per the fuzzy logic.

Block Diagram :
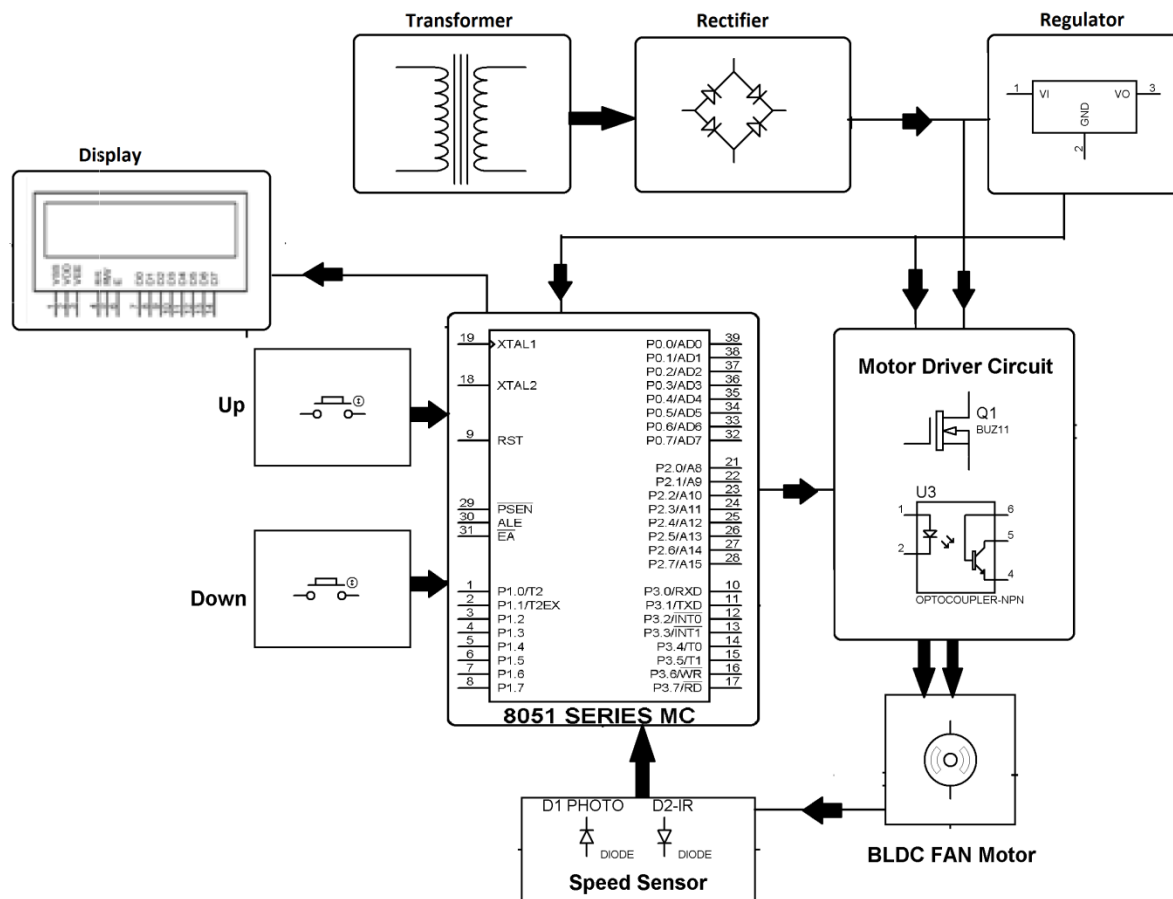
Hardware Specifications :

- BLDC motor

- 8051 Family Microcontroller

- IR Sensor

- LCD Display

- 12V Transformer

- Keypad

- Resistors

- Capacitors

- Diodes

Software Specifications :

- Keil µVision IDE

- MC Programming Language: Embedded C

Reference

- http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=5701428&newsearch=true&queryText=motor%20speed%20fuzzy

- http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=465842&newsearch=true&queryText=motor%20speed%20fuzzy