Temperature Based Fan Speed Control using NODEMCU (ESP8266)

Prajwal Lanjewar[1], Ashutosh Sarkar[2], Rahul Iraveni[3], Himanshu Khoke[4], Nikhil Durge[5], Madhavi Sadu[6]

Students, Computer Science Engineering Department [1,2,3,4,5]
Assistant Professor, Computer Science Engineering Department [6]
Rajiv Gandhi College of Engineering, Research and Technology, Chandrapur, Maharashtra, India.

Abstract: *With the rapid advancement of technology, our homes have embraced full automation, leading to a significant increase in our daily electricity consumption. Among the various benefits, the regular use of fans stands out as a means of ensuring comfort, particularly during hot weather. Consequently, it becomes our responsibility to establish a reliable system that promotes efficient electricity usage. This article outlines the procedure and functionality of an ESP8266-based Temperature Based Automatic Ceiling Fan system. The core components of this system include the ESP8266 microcontroller and a dimmer. The ESP8266 microcontroller offers built-in Wi-Fi capabilities, allowing seamless data transmission to the cloud. By leveraging these features, we can create a standalone automatic fan controller that adjusts the fan's speed based on the prevailing room temperature. The proposed system operates by measuring the room temperature using a sensor, such as the DHT22, and transmitting the collected data to the microcontroller. The microcontroller then regulates the fan's speed according to the temperature reading.*
This project serves as a demonstration of how to implement temperature-based fan speed control and monitoring using the DHT22 sensor, ESP8266 microcontroller, and dimmer. By incorporating these components, the microcontroller facilitates efficient operation by dynamically adjusting the fan's speed to meet specific requirements. The dimmer module comprises various components such as capacitors, TRIACs, diodes, and registers. These elements work together to control the power supplied to the fan, thus regulating its speed. Additionally, the inclusion of an LCD screen enhances the user-friendliness of the project by providing real-time displays of the fan speed and temperature at regular intervals.

Keywords: ESP8266, Home Automation, Fan Speed, DHT11 temperature sensor, Fan Speed Controller, LCD, Dimmer, etc

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