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Temperature Based Speed Control of Fan Using Arduino

Sahil Gorad[1], Rajas Bengale[1], Dhanashree Kulkarni[1], Vikas Solanke[2]

[1]Student, Department of computer engineering, MM Polytechnic, Pune, Maharashtra, India.

[2] Lecturer, Department of computer engineering, MM Polytechnic, Pune, Maharashtra, India

A B S T R A C T

In the current situation, access to electricity is reaching a critical stage. To protect and secure the future of man we need to save energy. As the motto suggests "One stored unit is one unit built". This project is an independent fan speed controller that controls the speed of the electric fan according to our need. The use of embedded technology makes this closed loop response control system more efficient and reliable. Arduino microcontroller allows for flexible and fast control. Liquid crystal display (LCD) makes the system easy to use. Sensitive temperature and fan speed values are displayed simultaneously on the LCD panel. It is highly compact as it is built using a few materials and can be connected to several applications including air-conditioners, water heaters, ice melters, ovens, heat exchangers, mixers, furnaces, incubators, heat baths and animal work tables.

INTRODUCTION

With the advancement of technology, intelligent programs are being introduced daily. It all becomes more complex and understandable. There is an increasing need for cutting-edge technology and clever electronic systems. Microcontrollers play a very important role in the development of intelligent systems as the brain is supplied to the system. Microcontrollers are still at the heart of the new technology being introduced every day. The microcontroller is primarily a single chip microprocessor suitable for control and automation of equipment and processes.

METHODOLOGY

The DHT11 temperature sensor is connected to Arduino to download room temperature data. The data is processed when the temperature is high and the fan speed is very similar when the temperature is low and the fan speed is low. In addition, if the temperature is below the normal range, the fan will be out of order. Temperature-related data, fan speed is displayed on the LCD for user use.

RESULTS AND DISCUSSION

In this post, we explained how we can design Speed Control Based on Temperature Follows with Arduino and LM35 Temperature Sensor. The microcontroller controls the speed of the electric fan according to the requirement and allows for flexible and fast control and the LCD makes the system easy to operate. The temperature sensed by the Celsius Scale and the fan speed in percent is displayed simultaneously on the LCD panel. The LM35 temperature sensor detects the temperature and converts it to an electronic (analog) signal, which is used on the Armeino UNO's small Atmega328 controller. Analog value is converted to a digital value. Therefore the audible values of temperature and fan speed are displayed on the LCD. When the temperature exceeds 30 ° C the fan begins to turn. A low-frequency pulse-width modulation (PWM) signal, whose operating cycle varies to adjust the fan speed used. An inexpensive, single, small transistor such as 2N222 or BD139 can be used here. It works well because the pass transistor is used as a switch.

Benefits: The project is an independent fan speed controller that controls the speed of the electric fan according to our need. The use of embedded technology makes this closed loop response control system more efficient and reliable. Arduino microcontroller allows for flexible and fast control.

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IV. CONCLUSION

Arduino based fan-controlled temperature is used. Therefore, here the fan speed is controlled using Pulse Width Modulation and the Arduino board according to the temperature sensed with the help of Temperature and Humidity Sensor (DHT22). The idea of the project is to change the fan temperature automatically. The PWM method is found to be the best way to control the speed of the fans using a reasonable temperature. The system works well. The speed of the fan depends on the temperature and there is no need to control the fan speed repeatedly

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