Fire Sensor

Introduction

This lab project involves the development of a fire sensor using an NTC thermistor, Arduino microcontroller, LCD (16×2) display, Buzzer, and a 10K resistor. The project's objective is to detect a sudden increase in temperature caused by a fire and trigger the buzzer to alert the user while displaying the temperature on the LCD.

Descirption

The project works by measuring the temperature using an NTC thermistor and detecting sudden temperature changes using the Arduino. The thermistor is connected to an analog input pin of the Arduino, and the analog-to-digital converter of the Arduino is used to convert the thermistor's resistance value to a temperature reading using the Steinhart-Hart equation. If the temperature reading exceeds a predefined threshold, the buzzer is triggered, alerting the user. At the same time, the LCD display shows the current temperature.

Hardware Design

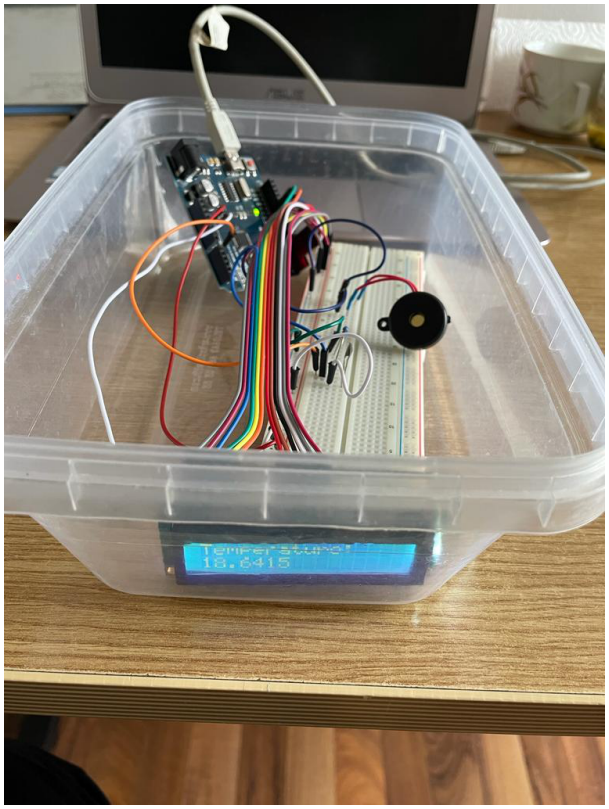
The following components were used in the project:

- NTC thermistor (two-legged)
- Arduino Uno microcontroller
- 16×2 LCD display
- Buzzer
- 10K Resistor
- Breadboard and jumper wires

Software Design

The Arduino IDE was used to write the program for the Arduino microcontroller. The program includes the Steinhart-Hart equation to convert the thermistor's resistance to temperature and a conditional statement to check if the temperature exceeds a predefined threshold. If the temperature exceeds the threshold, the buzzer is triggered, and the LCD display shows the temperature reading.

Rezultate Obţinute



Conclusions

The fire sensor project provides a simple and cost-effective solution for detecting sudden temperature changes caused by a fire. The project's use of an NTC thermistor, Arduino microcontroller, and LCD display makes it easy to implement and customize for specific applications. The inclusion of the buzzer provides an audible alert to the user, making it suitable for use in home or office environments. Overall, the project demonstrates the practical use of temperature sensors and microcontrollers in developing simple yet effective fire detection systems.

Download

O arhivă (sau mai multe dacă este cazul) cu fişierele obţinute în urma realizării proiectului: surse, scheme, etc. Un fişier README, un ChangeLog, un script de compilare şi copiere automată pe uC crează întotdeauna o impresie bună .

Fişierele se încarcă pe wiki folosind facilitatea **Add Images or other files**. Namespace-ul în care se încarcă fişierele este de tipul **:pm:prj20??:c?** sau **:pm:prj20??:c?:nume_student** (dacă este cazul). **Exemplu:** Dumitru Alin, 331CC → **:pm:prj2009:cc:dumitru_alin**.

Jurnal

Puteți avea și o secțiune de jurnal în care să poată urmări asistentul de proiect progresul proiectului.

Bibliografie/Resurse

Listă cu documente, datasheet-uri, resurse Internet folosite, eventual grupate pe **Resurse Software** şi **Resurse Hardware**.

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