Bangladesh University of Business and Technology

BUBT

Committed to Academic Excellence

Project Name.
Emergency Fire Response System

Course Title: Microcontroller and Embedded Systems Lab

Code: CSE 426

Submitted To

Md. Hasibur Rahmam

Lecturer, Dept. of CSE

Submitted By		
Name	ID	Program: B.Sc.Engg. in CSE
Md. Nazirul Islam	ID:16173103041	Intake: 36
Md. Asif Jahan	ID:16173103017	Section: 01
kazi Tayeb	ID:16172103080	

Introduction:

According to the Fire Service and Civil Defence statistics, 18,105 high-rise fires occur in last year causing 45 deaths and 269 injuries [2019]. Many of these deaths and injuries can presumably be avoided if evacuees had knowledge of the location of the fire and a solid exit strategy. In an age of IoT devices, there are no such commercial products available to address this problem. We have developed a technology that can be used as an Emergency Fire Response System.

Objective:

- Alarm systems and fire service monitoring of these systems are required in certain types of buildings.
- The Alarm systems we designed to warn occupants of a fire so they can safely evacuate the premises.
- Correctly maintained and operating alarm systems are effective and life-saving devices.
- Fire alarm systems are important in providing occupants of buildings prompt warning if a fire occurs.

Target Customers:

Fire Detectors play a very important role in Industries, Shops, Malls, Residential complexes, parking areas, etc. They help in detecting fire or smoke at an early stage and can help in saving lives.

Literature Review:

Kodali *et al.* [1] introduced a system where PIR motion sensors are installed at the entrances of a building. These sensors as explained earlier detect the motion of human beings. This signal which detects their presence becomes the input trigger for the micro-controller. The owner, who may or may not be present in that building, will be receiving a voice call on his mobile phone stating that 'There is an Intruder in the House'. To turn ON the lights and alarm at house.

R. K. Kodali, V. Jain, S. Bose and L. Boppana, "IoT based smart security and home automation system," *2016 International Conference on Computing, Communication and Automation (ICCCA)*, Noida, 2016, pp. 1286-1289, doi: 10.1109/CCAA.2016.7813916.

Value Proposition:

Fires continue to occur in modern architecture, the people's lives and property has brought huge losses. In order to reduce the fire in the building, automatic fire alarm equipment placed into a necessity.

Feature:

In this project, we interface Flame Sensor with Arduino to build a Fire Alarm System by using Arduino and flame sensor. The flame sensor module has a photodiode to detect the light and op-amp to control the sensitivity. It is used to detect fire and provide a HIGH signal upon the detection. Arduino reads the signal and provides alert by turning on the buzzer and LED. The flame sensor used here is an IR based flame sensor.

Tools and Resources:

- Arduino Uno (any Arduino board can be used)
- Flame sensor
- LED
- Buzzer
- Resistor
- Jumper wires

Limitation:

- Very sensitive, which can lead to false alarms as a product of cooking.
- Not as responsive to smoldering fires - they are minutes slower than photoelectric sensors in detecting smoke particles from smoldering fires
- Sensitive to dust particles and insects, meaning that regular maintenance is needed

Ethics:

Fire alarm system, also known as danger signal is a live saving project for our society.It is used over the world just to save life. In the larger companies, industries, garments, hospital it is needed for the worker. As fire accident can be happened anytime there is no substitute for fire alarm.

Cost:

This project is entitled low-cost fire alarm. The main aim of the project is to provide the best security from fire asserts at a low cost.

Challenge:

It is much difficult to invent a thing and to develop it. So when we go for the project of fire alarm system we go through many complexities. First for the effectiveness of the system we need appropriate sensor to check as it ok or not. First time it was not accurate then we have fix it. Secondly, that sensor cannot catch from large distance, so it is also difficult to fix the sensor properly. Thirdly, timing is a major factor for fire alarm, as if there is time delay error occur it will be very dangerous. So, these are the challenges we face during the project.

Schedule:

We will finish our project within three weeks. In 1st week, we implement the model of the proposed system. In 2nd week, we will design the fire alarm system through application (proteus).During this, we have to check all the connections and confirm that our system will work properly. After all, we have to implement code through arduino. Finally, we should check whether the system will work or not. If not, then we have to re-correct it. After that, we have to proceed it.

Task Distribution:

ID	NAME	TASKS
16173103041	Md. Nazirul Islam	Implementing proteus design
16173103017	Md. Asif Jahan	Implementing proteus design
16172103080	kazi Tayeb	Implementing Code through arduino