**THERMA SIGHT ROVER**

MINI PROJECT REPORT

for

21CSS201T - COMPUTER ORGANIZATION AND ARCHITECTURE

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*In partial fulfillment of the requirements for the degree of*

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE ENGINEERING

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Description automatically generated

DEPARTMENT OF COMPUTING TECHNOLOGIES

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

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KATTANKULATHUR – 603 203

BONAFIDE CERTIFICATE

Certified that Computer Architecture and organization Mini Project report titled “**THERMA SIGHT ROVER**” is the Bonafide work of “**Andrew Solomon**” **[RA2311003010381],** “**Kaushtubh Kumar**” **[RA2311003010402],** who carried out the project work under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form any other work.

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**SRM Institute of Science and Technology**

**College of Engineering and Technology**

**SCHOOL OF COMPUTING**

**21CSS201T**

**COMPUTER ORGANIZATION AND ARCHITECTURE**

**MINI PROJECT REPORT – EVALUATION SHEET**

**ODD Semester: 2024-2025**

Student Register Number: **RA2311003010402**

Student Name: Kaushtubh Kumar

Year & Semester: **II & III**

Section: **G1**

Project Title: **THERMA SIGHT ROVER**

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| --- | --- | --- |
| **Particulars** | **Max. Marks** | **Marks Obtained** |
|  |
| Review 1 and 2 | 05 |  |
| Demo verification &viva | 03 |  |
| Project Report | 02 |  |
| **Total** | **10** |  |

**Date : 07.11.24**

**Staff Name : Dr. Sudestna Nahak**

**Signature :**

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**THERMA SIGHT ROVER**

**OBJECTIVE:The primary objective of THERMA SIGHT ROVER is to basically not risk human life to save another human life . With the help of technology it will guide the survivors of natural disasters trapped in buildings a way out and will provide essential supplies to live upon and survive .**

**ABSTRACT: This project introduces a Bluetooth-controlled car designed to assist in disaster scenarios, particularly after events like earthquakes. Equipped with light detection sensors, the car identifies and illuminates safe exit paths, helping people navigate through debris and darkness. It also features sound detection technology to locate individuals in distress, providing real-time data for rescue teams. By combining these features, the vehicle enhances rescue efforts, guiding survivors to safety and improving emergency response. This solution aims to save lives and support faster evacuations during critical moments.**

**INTRODUCTION : Considering the growing frequency and intensity of natural disasters, especially earthquakes, this project aims to offer a practical solution for improving emergency response. We introduce a Bluetooth-controlled car designed to help people safely navigate dangerous environments during such crises. Equipped with light detection sensors, the car identifies and illuminates the safest escape routes, ensuring clear visibility through debris and darkness. What makes this vehicle truly unique is its advanced sound detection system, which can pick up cries for help or other important sounds. This allows the car to locate and move toward individuals in distress, speeding up rescue efforts. In addition, the car’s heat detection sensors can identify human body heat, making it easier to find people who may be trapped in challenging conditions. By combining these technologies, the car serves as a vital tool for guiding survivors to safety while providing real-time data about their surroundings. It enhances emergency responders' ability to assess situations and helps survivors find safe paths through dangerous areas. Ultimately, this Bluetooth-controlled car strengthens disaster preparedness and response, promoting quicker evacuations and better communication with rescue teams. In doing so, it aims to save lives and reduce panic, helping people navigate to safety even in the most chaotic and challenging moments.**

**HARDWARE/SOFTWARE REQUIREMENTS:**

Arduino,, , Thermal sensors , Raspberry Pi modules , Python , Flask , Django , driver module , Robodo W2 Hc wireless Rf Transceiver Module

**CONCEPTS/WORKING PRINCIPLE**

The Bluetooth-controlled car designed for disaster response operates by integrating multiple advanced sensors and remote navigation to enhance rescue efforts in hazardous environments. Using Bluetooth, the car can be remotely controlled by emergency responders, guiding it through dangerous terrain without human intervention.

The car is equipped with light detection sensors that identify safe escape routes and illuminate them, ensuring clear visibility even in darkness or debris-filled areas. It also features an advanced sound detection system that picks up cries for help or distress signals, enabling the car to locate individuals in need of rescue. The car's thermal sensors detect human body heat, allowing it to identify survivors trapped under rubble or in difficult-to-reach areas.

Data from these sensors is sent back to the controller in real-time, helping responders assess the situation and make informed decisions. The car's ability to combine sound, light, and heat detection allows it to autonomously or semi-autonomously navigate disaster zones, locate survivors, and guide them to safety. This technology enhances emergency response efforts by providing real-time information, improving communication, and accelerating rescue operations, ultimately helping save lives and reduce panic in chaotic disaster scenarios.

**Our Features**

* Facial detection system
* Bluetooth connectivity for remote control
* Thermal Imaging
* High-Resolution video streaming

**Our Plan**

* Integrate artificial intelligence using python for facial detection system.
* Use automotive engineering to make the device mobile and portable.
* Use thermal sensors to detect the presence of humans and other living organisms.
* Integrate a high-resolution camera to continuously stream real-time video.
* Integrate Bluetooth and Wi-Fi connectivity for remote control.

**APPROACH/METHODOLOGY/PROGRAMS:**

int IR1 = 2;

int IR2 = 3;

int IR3 = 4;

int led1 = 9;

int led2 = 10;

int led3 = 11;

//#define LDR = A0;

int brightness = 0;

void setup() {

pinMode(IR1, INPUT);

pinMode(IR2, INPUT);

pinMode(IR3, INPUT);

Serial.begin(9600);

// pinMode(LDR, INPUT);

pinMode(led1, OUTPUT);

pinMode(led2, OUTPUT);

pinMode(led3, OUTPUT);

}

void loop() {

brightness = map(analogRead(A0),0,1000,0,255);

Serial.println(brightness);

if(brightness > 150){

if(digitalRead(IR1) == 0)

{

analogWrite(led1, brightness);

analogWrite(led2, brightness);

delay(100);

}

else {

analogWrite(led1, 10);

analogWrite(led2, 10);

}

if(digitalRead(IR2) == 0)

{

analogWrite(led2, brightness);

analogWrite(led3, brightness);

delay(100);

}

else {

analogWrite(led2, 10);

analogWrite(led3 ,10);

}

if(digitalRead(IR3) == 0)

{

analogWrite(led3, brightness);

delay(100);

}

else analogWrite(led3, 10);

delay(300);

}

else {

analogWrite(led1, 0);

analogWrite(led2, 0);

analogWrite(led3, 0);

}

}

**OUTPUT:**

A small toy car and a small computer chip

Description automatically generated with medium confidence

A close up of a toy car

Description automatically generated

**CONCLUSIONS:**

This project demonstrates the potential of a Bluetooth-controlled car equipped with advanced sensor technologies to significantly enhance emergency response efforts during natural disasters, particularly earthquakes. By integrating light detection, sound detection, and thermal imaging sensors, the car offers a comprehensive solution for navigating hazardous environments, identifying safe escape routes, locating survivors, and providing real-time data to emergency responders.

The Bluetooth-controlled system allows for precise, remote operation, minimizing the risk to human rescuers and enabling faster and more efficient rescue efforts. The car's ability to detect heat signatures, sound sources, and map safe paths ensures that trapped individuals are located quickly, even in challenging conditions where visibility is limited. Furthermore, the data collected by the vehicle can assist in the real-time assessment of the disaster zone, aiding decision-making and enhancing coordination between survivors and rescue teams.

Ultimately, this project highlights the promise of combining cutting-edge technology with practical emergency response solutions to improve disaster preparedness and response. By reducing the time required to locate and evacuate survivors, it aims to save lives, reduce panic, and strengthen the resilience of communities facing natural disasters. The innovative approach of this vehicle has the potential to revolutionize how we respond to crises, ensuring safer and more efficient rescues in the most chaotic and dangerous situations.

**REFERENCES:**

**Cao, Y., Jiang, J., & Yang, Y. (2020).** *Smart Street Lighting System: A Sustainable Solution for Urban Infrastructure.* International Journal of Energy Research, 44(5), 3309-3322.