

**A  
Seminar Report  
on  
ZONE COMPUTATION ON MAP USING PYTHON**

**Under the company “Bharat Electronics Limited”**

**Submitted in partial fulfilment of the requirement for the award**

**OF**

**BACHELOR OF TECHNOLOGY**

**IN**

**COMPUTER SCIENCE ENGINEERING**

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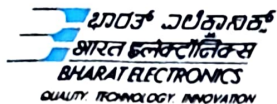


**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING  
SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY**

**A CENTRAL UNIVERSITY  
BILASPUR, CHHATTISGARH**

**2024-2025**

# INTERNSHIP COMPLETION CERTIFICATE



## BHARAT ELECTRONICS LIMITED

(A Govt. of India Enterprise, Ministry of Defence)  
Jalahalli Post, Bengaluru - 560 013, India

### CENTRE FOR LEARNING AND DEVELOPMENT

## Certificate

*This is to certify that*

Sri./Smt/Kum. .... MENDA HARSHITHA .....

Ref No. .... 1410/CLO/HR/2024-25/27199 .....

student of .... GURU GHASIDAS VISHWAVIDYALAYA .....

carried out Project Work/Internship on "ZONE COMPUTATION

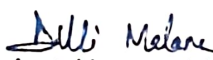
ON MAP" USING PYTHON .....

in .... SOFTWARE .....

SBU/CSG of BEL, Bengaluru from .... 15-05-2024 .....

to .... 14-06-2024 .....

*He/She was regular and punctual in his/her attendance  
and his/her conduct was satisfactory during the period.*

  
Project / Internship Guide

  
Head (HR/CLD)

Date : 14/06/24

Place : Bengaluru

# INTRODUCTION

In Zone computation of Emergency response analysis involves assessing and mitigating risks associated with critical incidents such as bomb threats. In such scenarios, rapid decision-making is essential to safeguard lives and infrastructure. Geographic Information Systems (GIS) and mathematical tools play a crucial role in analyzing potential threats and response strategies.

The Haversine formula, a widely used equation in GIS, helps calculate the shortest distance between two points on a sphere, given their latitude and longitude. In emergency response analysis, particularly for bomb threats, this formula can be used to determine the proximity of critical locations (e.g., schools, hospitals) to a reported threat. This information allows emergency teams to prioritize evacuations, secure vulnerable areas, and deploy resources more effectively.

Using Python, the Haversine formula can be implemented to automate these calculations on a map. Python libraries like `geopy` and `haversine` offer efficient ways to compute distances between GPS coordinates. By integrating this into a mapping platform, such as `folium` or `matplotlib`, analysts can visualize threat zones, identify high-risk areas, and optimize resource deployment.

For instance, if a bomb threat is reported in a city, Python can be used to calculate the distance between the threat and nearby public buildings. By layering this information on a map, emergency planners can quickly identify evacuation zones and determine the fastest routes for emergency services. This approach enhances the effectiveness of the response, minimizes risk, and ensures a data-driven method for managing critical incidents.

By combining this with Python's geographic and mapping libraries, you can build real-time systems to respond to threats efficiently, ensuring safety and minimizing risks. This foundational approach can be extended by integrating additional data such as traffic, weather conditions, or real-time tracking of emergency units.