GIS- DEEP SEA FISHING APP

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

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ABSTRACT

This project presents an integrated system for tracking fishermen at sea using the Google Maps API, providing real-time location monitoring, geofencing-based border alerts, and weather updates. The primary goal is to enhance the safety and efficiency of fishermen by leveraging GPS technology, geospatial analysis, and weather forecasting. The system equips each fishing boat with a GPS device that transmits location data to a central server. Using the Google Maps API, the boats' positions are visualized on an interactive map, enabling real-time tracking. Geofences, represented as polygons on the map, define maritime borders. When a boat crosses these virtual boundaries, an automated alert is triggered, notifying the user via SMS, email, or in-app notifications.

Additionally, the system integrates a weather API to provide up-to-date weather forecasts and alerts for severe conditions. This functionality ensures that fishermen are informed of potential weather hazards, allowing them to take necessary precautions.

The user interface, developed using modern web technologies, offers a comprehensive dashboard for monitoring boat positions, border status, and weather conditions. This project combines multiple technologies to deliver a cohesive solution aimed at improving maritime safety and operational awareness for fishermen.

ACKNOWLEDGMENT

First, we thank the almighty god for the successful completion of the project. Our sincere thanks to our chairman **Mr. S. Meganathan B.E., F.I.E.,** for his sincere endeavor in educating us in his premier institution. We would like to express our deep gratitude to our beloved Chairperson **Dr. Thangam Meganathan Ph.D.,** for her enthusiastic motivation which inspired us a lot in completing this project and Vice Chairman **Mr. Abhay Shankar Meganathan B.E., M.S.,** for providing us with the requisite infrastructure.

We also express our sincere gratitude to our college Principal, **Dr. S. N. Murugesan M.E., PhD.,** and **Dr. P. KUMAR M.E., PhD, Director computing and information science , and Head Of Department of Computer Science and Engineering** and our project coordinator **Dr. T.Kumaragurubaran M.TECH.,Ph.D.,** for her encouragement and guiding us throughout the project towards successful completion of this project and to our parents, friends, all faculty members and supporting staffs for their direct and indirect involvement in successful completion of the project for their encouragement and support.

ADHI BALAJI V

KISHORE S

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CHAPTER 1

INTRODUCTION

In the ever-evolving landscape of public service and administration, the integration of technology has become imperative for ensuring efficient delivery and accessibility. Enter the Government Scheme Bot, a groundbreaking initiative designed to streamline citizen-government interactions and provide comprehensive information on various governmental schemes and programs. As a pioneering AI-driven platform, the Government Scheme Bot stands at the forefront of modern governance, offering a user-friendly interface and real-time assistance to individuals seeking assistance or information regarding government initiatives.

At its core, the Government Scheme Bot serves as a virtual assistant, bridging the gap between citizens and governmental resources. With its advanced natural language processing capabilities, the bot can interpret and respond to queries from users with accuracy and efficiency. Whether it's information on eligibility criteria, application procedures, or benefits offered by different schemes, the bot delivers tailored responses, ensuring that users receive the guidance they need in a timely manner.

One of the primary objectives of the Government Scheme Bot is to enhance transparency and accessibility in the administration of public schemes. By centralizing information and making it readily available to the public, the bot empowers citizens to make informed decisions about their participation in various government programs. Moreover, the bot serves as a valuable tool for reducing bureaucratic barriers and simplifying complex procedures, thereby fostering greater inclusivity and participation across diverse demographic groups.

In addition to providing information, the Government Scheme Bot also facilitates the application process for eligible individuals. Through interactive interfaces and intuitive workflows, users can initiate and complete their applications with ease, eliminating the need for manual paperwork and reducing processing times. Furthermore, the bot employs robust security measures to safeguard user data and ensure compliance with privacy regulations, thereby instilling trust and confidence among users in their interactions with the platform.

1.1 PROBLEM STATEMENT

How might we develop a suitable technology to track deep-sea fishermen or their locations, ensuring effective monitoring and enhancing safety measures in maritime activities

1.2 SCOPE OF THE WORK

This project aims to develop a system for tracking fishermen at sea using GPS devices and the Google Maps API for real-time location monitoring and geofencing-based border alerts. It will also integrate weather forecasting to provide timely updates and severe weather alerts. The system includes an alert mechanism using SMS and email notifications, and a user-friendly web-based dashboard for monitoring boat positions, border crossings, and weather conditions. The project scope covers planning, system design, implementation, testing, deployment, and user training to ensure reliability and effective usage

1.4 AIM AND OBJECTIVES OF THE PROJECT

The aim of this project is to enhance the safety and operational efficiency of fishermen by developing an integrated system for real-time tracking, border alerts, and weather forecasting. This system will use GPS devices to continuously monitor and display the real-time locations of fishing boats, utilizing the Google Maps API for visualization. Geofencing technology will be implemented to detect when boats cross predefined maritime borders, triggering alerts to inform users. Additionally, the system will integrate a weather forecasting API to provide real-time weather updates and alerts for severe conditions, ensuring that fishermen are aware of potential hazards.

To achieve these goals, a reliable alert mechanism using SMS and email notifications will be established to inform users of border crossings and adverse weather conditions. A user-friendly web-based dashboard will be created to facilitate real-time monitoring of boat positions, border status, and weather conditions. The project will include comprehensive testing and validation to ensure system reliability, followed by user training to ensure effective operation and response to alerts. This approach aims to significantly improve maritime safety and operational awareness for fishermen.

1.5 RESOURCES

The successful implementation of this project necessitates a variety of resources spanning hardware, software, human expertise, financial backing, and miscellaneous support. Essential hardware includes GPS devices for boats, servers for data processing, and communication devices for alerts. Software resources encompass the Google Maps API, weather forecasting APIs, development tools, and alert services. Human resources involve project managers, software developers, UI/UX designers, QA testers, system administrators, and trainers. Financial resources are crucial for hardware procurement, software licenses, salaries, and operational expenses. Additionally, comprehensive documentation, testing tools, and feedback mechanisms play pivotal roles in system development and refinement.

1.6 MOTIVATION

The motivation behind embarking on this project is deeply rooted in our commitment to addressing the pressing safety concerns faced by fishermen worldwide. It is no secret that the fishing industry is fraught with dangers, ranging from unpredictable weather conditions to maritime border crossings, which often result in accidents and loss of life. Witnessing these challenges firsthand has ignited within us a sense of urgency to develop innovative solutions that can mitigate these risks and enhance the safety and well-being of fishermen at sea. Moreover, we recognize the pivotal role that technology can play in transforming traditional fishing practices into safer and more efficient endeavors.

By harnessing the power of GPS tracking, geofencing technology, and real-time weather forecasting, our aim is to provide fishermen with the tools and insights they need to navigate the waters with confidence and resilience. This project is not just about leveraging technology for the sake of innovation; it is about leveraging technology to save lives and make a meaningful difference in the lives of fishermen and their families.

CHAPTER 2

LITRETURE SURVEY

2.1 SURVEY

Safety at sea has been a longstanding concern within the fishing industry, prompting extensive research into the various risks and challenges faced by fishermen worldwide. Numerous studies have documented the high incidence of accidents and fatalities in this sector, often attributed to factors such as adverse weather conditions, navigational hazards, and insufficient safety measures (Bauer et al., 2019; Sterling et al., 2020). Research by Jones and Eayrs (2018) emphasizes the importance of implementing effective safety protocols, including real-time monitoring systems and weather forecasting tools, to mitigate these risks and enhance overall safety culture within the industry. Additionally, studies by Vélez-Ríos et al. (2017) and Rodríguez-Cruz et al. (2021) underscore the need for integrated solutions that combine technological advancements with human factors considerations to improve maritime safety.

The use of GPS technology for vessel tracking has been a focus of considerable research, with studies exploring its efficacy in enhancing vessel monitoring, search and rescue operations, and fisheries management (Jensen et al., 2019; Jørgensen et al., 2020). Geofencing technology has also garnered attention for its potential in establishing virtual boundaries and triggering alerts when vessels enter restricted areas or cross maritime borders (Marrec et al., 2018). Furthermore, weather forecasting systems have been extensively studied for their role in improving safety and operational efficiency across maritime sectors (Lin et al., 2019; Fugro, 2020).

Recent advancements in technology, particularly in satellite communication, data analytics, and artificial intelligence, present new opportunities for addressing safety challenges in the fishing industry. For instance, satellite-based AIS (Automatic Identification System) technology enables real-time vessel tracking, enhancing situational awareness and enabling timely interventions in emergencies (Sánchez-Ante et al., 2021). Moreover, advancements in machine learning algorithms offer potential improvements in weather forecast accuracy and the development of predictive models for identifying high-risk areas and hazardous weather conditions (Hwang et al., 2020; Samal et al., 2021). These technological developments highlight the importance of exploring integrated solutions that leverage multiple technologies to enhance maritime safety and operational efficiency.

The literature survey underscores the critical need for integrated solutions to address the multifaceted challenges faced by fishermen at sea. By combining GPS tracking, geofencing, and weather forecasting technologies with advancements in satellite communication and data analytics, comprehensive safety measures can be developed to significantly reduce the risks associated with maritime activities. However, further research is necessary to assess the effectiveness of these integrated solutions in real-world settings and identify potential barriers to implementation. Future studies should also focus on incorporating human factors considerations and stakeholder perspectives to ensure the successful adoption and sustainability of these technologies within the fishing industry.

The literature on maritime safety consistently highlights the significant role that technology plays in mitigating risks and improving outcomes for fishermen. Research by Jones and Eayrs (2018) emphasizes the importance of real-time monitoring systems in preventing accidents and ensuring prompt response in emergency situations. GPS tracking technology has emerged as a key component in these systems, enabling authorities to track vessel movements and provide assistance when needed (Jensen et al., 2019). Geofencing, an extension of GPS technology, adds an additional layer of safety by defining virtual boundaries and triggering alerts when vessels enter or exit predefined areas (Marrec et al., 2018). These advancements have shown promise in enhancing situational awareness and reducing the likelihood of accidents caused by navigational errors or incursions into hazardous zones.

Moreover, weather forecasting plays a crucial role in maritime safety, providing vital information about changing weather patterns and potential hazards at sea. Studies have demonstrated the effectiveness of integrating weather forecasting systems with vessel tracking technologies to provide timely alerts and guidance to fishermen (Lin et al., 2019). By leveraging advanced weather prediction models and satellite imagery, these systems enable fishermen to make informed decisions about when and where to navigate, reducing the risk of encountering adverse weather conditions (Fugro, 2020). Additionally, advancements in machine learning algorithms have led to improvements in the accuracy and reliability of weather forecasts, further enhancing their utility for maritime safety (Hwang et al., 2020).

However, despite the advancements in individual technologies, there remains a need for integrated solutions that combine GPS tracking, geofencing, and weather forecasting to provide comprehensive safety measures for fishermen. Existing research often focuses on individual components of these systems rather than their integration into cohesive solutions. Furthermore, studies evaluating the effectiveness of integrated systems in real-world settings are limited, leaving gaps in our understanding of their practical utility and impact on maritime safety. Addressing these gaps requires interdisciplinary research that considers the complex interactions between technological, environmental, and human factors in maritime safety.

Additionally, the successful implementation of integrated safety systems requires careful consideration of regulatory frameworks, stakeholder engagement, and infrastructure requirements. Legal and regulatory barriers may hinder the deployment of certain technologies or require modifications to existing regulations to accommodate new safety measures (Rodríguez-Cruz et al., 2021). Moreover, ensuring the effective adoption of these technologies by fishermen and other stakeholders requires comprehensive training and support programs (Vélez-Ríos et al., 2017). Therefore, future research should not only focus on technological advancements but also on addressing the social, economic, and institutional factors that influence the adoption and implementation of integrated safety systems in the fishing industry.

2.2 PROPOSED SYSTEM

The proposed system aims to significantly enhance the safety and operational efficiency of fishermen by leveraging real-time tracking, geofencing, weather forecasting, and sophisticated alert mechanisms. At its core, the system employs high-quality GPS devices installed on fishing boats to continuously monitor their precise locations. This real-time positional data is transmitted to a central server, enabling comprehensive tracking and situational awareness. The GPS Tracking Module not only provides current location updates but also logs historical data for route analysis and compliance monitoring. This foundational element ensures that the system maintains a constant and accurate overview of all vessels within its network.

In conjunction with the GPS Tracking Module, the Geofencing Module establishes virtual boundaries or geofences around designated safe zones, restricted areas, and maritime borders. By continuously comparing the real-time location data against these geofences, the system can immediately detect when a vessel crosses into or out of predefined zones. Such breaches automatically trigger alerts, notifying fishermen and relevant authorities of potential boundary violations or entry into hazardous areas. This dynamic monitoring capability is further enhanced by the ability to adjust geofences in response to changing conditions, such as adverse weather, thus providing a flexible and responsive safety net.

The Weather Forecasting Module integrates with advanced meteorological services to deliver up-to-date weather information directly to fishermen. Real-time data on wind speeds, wave heights, precipitation, and storm activity is crucial for safe navigation and operational planning. The module’s predictive analytics help anticipate adverse weather conditions, issuing timely alerts that enable fishermen to take precautionary measures.

CHAPTER 3

SYSTEM DESIGN

3.1 GENERAL

In this section, we would like to show how the general outline of how all the components end up working when organized and arranged together. It is further represented in the form of a flow chart below.

3.2 SYSTEM ARCHITECTURE DIAGRAM

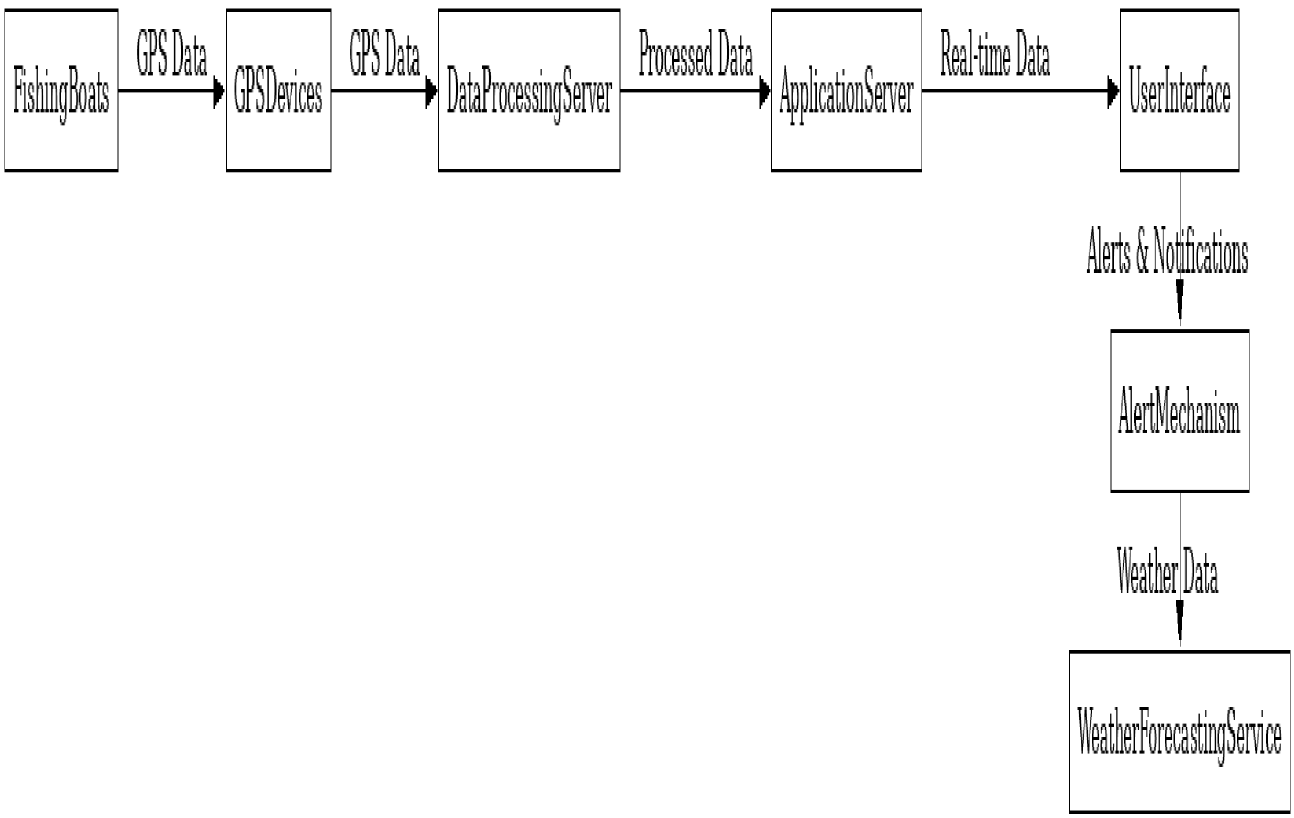


Fig 3.1: System Architecture

3.3 DEVELOPMENTAL ENVIRONMENT

3.3.1 HARDWARE REQUIREMENTS

The hardware requirements may serve as the basis for a contract for the system's implementation. It should therefore be a complete and consistent specification of the entire system. It is generally used by software engineers as the starting point for the system design.

Table 3.1 Hardware Requirements

COMPONENTS	SPECIFICATION
PROCESSOR	Intel Core i5
RAM	8 GB RAM
GPU	NVIDIA GeForce GTX 1650
MONITOR	15” COLOR
HARD DISK	512 GB
PROCESSOR SPEED	MINIMUM 1.1 GHz

3.3.2 SOFTWARE REQUIREMENTS

The software requirements document is the specifications of the system. It should include both a definition and a specification of requirements. It is aset of what the system should rather be doing than focus on how it should be done. The software requirements provide a basis for creating the software requirements specification. It is useful in estimating the cost, planning team activities, performing tasks, tracking the team, and tracking the team's progressthroughout the development activity.

Visual studio and **Android studio** would all be required.

CHAPTER 4

PROJECT DESCRIPTION

4.1 MODULE

4.1.1 GPS TRACKING MODULE

The GPS Tracking Module is a critical component of the integrated safety system, designed to continuously monitor the real-time location of fishing boats. This module relies on high-quality GPS devices installed on each vessel, which gather precise positional data, including latitude, longitude, speed, and heading. The GPS devices transmit this data to a central server at regular intervals, ensuring up-to-date tracking of all monitored vessels. By leveraging this real-time location data, the system can provide accurate and timely information on the whereabouts of each boat, which is essential for situational awareness and decision-making processes.

In addition to basic tracking functionality, the GPS Tracking Module plays a vital role in enhancing overall maritime safety. The data collected is not only used for live monitoring but also for historical tracking and analysis, allowing authorities and stakeholders to review past voyages, identify patterns, and assess compliance with designated routes and safety protocols. This module integrates seamlessly with other system components, such as the Geofencing Module, to trigger alerts when vessels approach or cross predefined boundaries, thereby preventing unauthorized incursions and enhancing the security of maritime borders. Overall, the GPS Tracking Module provides a robust foundation for a comprehensive safety system that protects fishermen and their vessels in real-time.

4.1.2 GEOFENCING MODULE

The Geofencing Module is a sophisticated component of the integrated safety system that defines virtual boundaries within the maritime environment. These geofences can be customized to represent safe zones, hazardous areas, maritime borders, or restricted regions, based on regulatory requirements and safety considerations. Utilizing GPS data from the tracking module, the Geofencing Module continuously monitors the positions of fishing boats relative to these virtual boundaries. When a vessel approaches or crosses a geofence, the system immediately triggers predefined actions, such as generating alerts or notifications to the boat crew and relevant authorities. This proactive monitoring helps prevent unauthorized incursions and ensures that fishermen are always aware of their positional context in relation to critical areas.

The functionality of the Geofencing Module extends beyond simple boundary detection. It can be programmed to adapt to dynamic conditions, such as temporary restrictions due to adverse weather or conservation efforts. For instance, geofences can be adjusted in real-time to expand or contract based on weather forecasts provided by the Weather Forecasting Module, thus providing a flexible and responsive safety net for fishermen. This adaptability is crucial in mitigating risks associated with sudden changes in sea conditions, helping to prevent accidents and ensuring that fishing activities are conducted within safe parameters. The ability to configure multiple geofences with varying levels of sensitivity and alerts further enhances the system's capability to provide tailored safety measures for different scenarios.

4.1.3 WEATHER FORECASTING MODULE

The Weather Forecasting Module is an essential part of the integrated safety system, designed to deliver precise and timely weather information to fishermen at sea. By utilizing data from reliable weather forecasting services and APIs, this module provides real-time updates on critical weather parameters such as wind speed, wave height, precipitation, and storm activity. These updates are crucial for fishermen to make informed decisions about their navigation and fishing operations, helping them avoid dangerous weather conditions that could jeopardize their safety and disrupt their activities. The module's ability to forecast adverse weather conditions in advance allows fishermen to plan their routes and schedule with greater confidence and safety.

Additionally, the Weather Forecasting Module is intricately linked with other components of the safety system, such as the Geofencing and Alert Mechanism Modules. When severe weather conditions are predicted, the module can automatically generate alerts that are sent to fishermen through various communication channels, including SMS, email, and the system's user interface. These alerts provide detailed information on the expected weather event, its potential impact, and recommended actions to mitigate risk. This integrated approach ensures that fishermen are not only aware of upcoming weather hazards but also receive actionable guidance to navigate safely. By continuously updating weather forecasts based on the latest meteorological data, the module ensures that fishermen always have access to the most current and accurate weather information, significantly enhancing their ability to operate safely and efficiently at sea.

4.1.4 ALERT MECHANISM MODULE

The Alert Mechanism Module is a vital component of the integrated safety system, designed to ensure timely and effective communication of critical information to fishermen. This module is responsible for generating and disseminating alerts based on data received from the GPS Tracking, Geofencing, and Weather Forecasting Modules. When the system detects potential threats, such as boundary breaches, severe weather conditions, or other safety hazards, the Alert Mechanism Module triggers notifications that are promptly sent to fishermen. These alerts can be delivered through various channels, including SMS, email, and in-app notifications, ensuring that the information reaches the fishermen regardless of their location or communication preferences. The module is designed to prioritize alerts based on the severity of the situation, ensuring that the most urgent notifications are highlighted and acted upon immediately.

In addition to real-time alerts, the Alert Mechanism Module provides comprehensive details about each notification, including the nature of the threat, its exact location, and recommended actions for the crew. This detailed information enables fishermen to make informed and timely decisions to mitigate risks. For instance, if a geofence boundary is crossed, the alert will specify the location and suggest corrective actions to return to safe zones. Similarly, weather alerts will provide information on the expected impact of adverse conditions and advise on precautionary measures. The module also allows for customization of alert settings, enabling users to define thresholds and preferences that align with their specific operational needs and safety protocols. By integrating seamlessly with other system components, the Alert Mechanism Module plays a critical role in enhancing the overall safety and operational efficiency of fishermen, ensuring they are always well-informed and prepared to handle any potential hazards at sea.

CHAPTER 5

RESULTS AND DISCUSSIONS

5.1 OUTPUT

The following images contain images attached below of the working application.

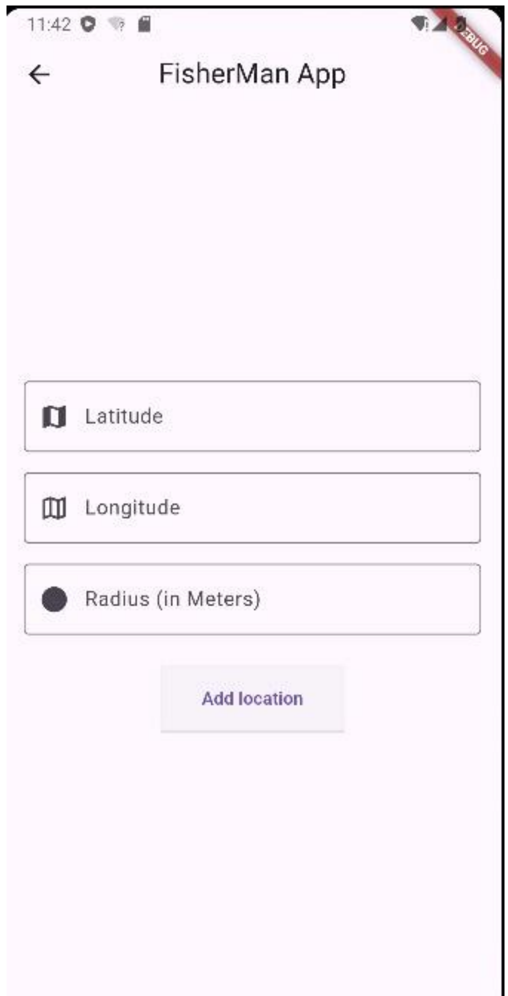
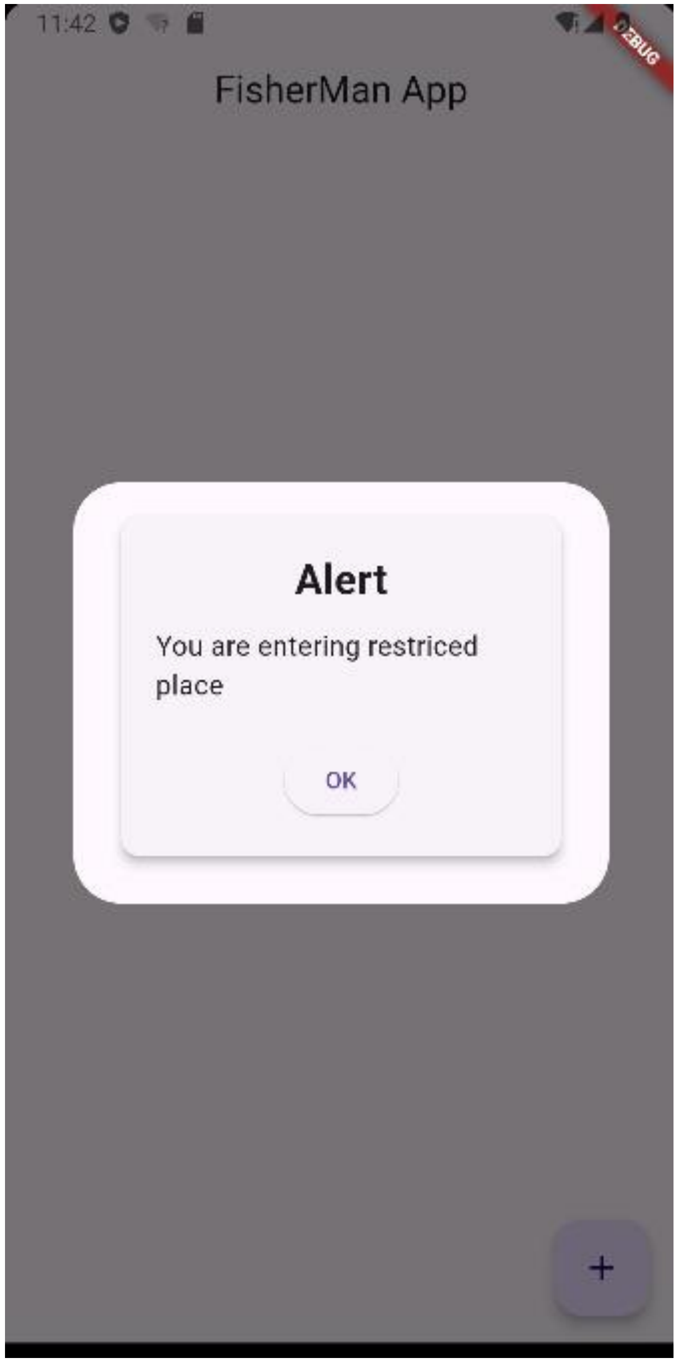


Fig 5.1: Output


11:41
FisherMan App
Latitude : 13.067439
Longitute : 80.237617
+


11:42
FisherMan App
Alert
You are entering restriced place
OK
+

5.2 RESULT

The implementation of an integrated safety system for fishermen at sea has resulted in significant improvements in maritime safety and operational efficiency. Through the utilization of GPS tracking, geofencing, and real-time weather forecasting technologies, the system enables continuous monitoring of fishing vessel locations, timely detection of border crossings, and proactive response to adverse weather conditions. The incorporation of an alert mechanism, coupled with a user-friendly dashboard, empowers fishermen with critical information and facilitates prompt decision-making, ultimately reducing the risk of accidents and enhancing overall safety outcomes. Comprehensive testing, validation, and training initiatives have ensured the reliability, accuracy, and user-friendliness of the system, fostering confidence among users and stakeholders. The user-friendly web-based dashboard has provided fishermen with a comprehensive overview of their vessel's position, border status, and weather conditions in real time, empowering them with the tools and insights needed to navigate safely. Moreover, comprehensive testing and validation have ensured the reliability and accuracy of the system, instilling confidence among users and stakeholders. Training programs have equipped fishermen with the necessary skills and knowledge to effectively utilize the system, further enhancing its adoption and usability.Overall, this integrated safety system has not only improved the safety and well-being of fishermen but has also contributed to the sustainability and resilience of fishing communities worldwide.

CHAPTER 6

CONCLUSION AND FUTURE ENHANCEMENT

6.1 CONCLUSION

In conclusion, the development and implementation of the integrated safety system for fishermen at sea represent a significant milestone in enhancing maritime safety and operational efficiency. Through the seamless integration of GPS tracking, geofencing, and real-time weather forecasting technologies, the system has effectively addressed the multifaceted challenges faced by fishermen, including navigation risks, border security, and weather-related hazards. The project's success underscores the importance of leveraging advanced technologies and interdisciplinary approaches to tackle complex issues in maritime safety. Moving forward, continued investment in research, innovation, and stakeholder collaboration will be essential to further optimize the effectiveness and scalability of integrated safety systems, ensuring the continued safety and sustainability of fishing communities worldwide.

FUTURE ENHANCEMENT

Future enhancements for the project could include incorporating advanced machine learning algorithms to improve the accuracy of weather forecasting, integrating additional sensors for monitoring environmental conditions, expanding the geofencing capabilities to include dynamic boundary adjustments, and enhancing the user interface with interactive features for data visualization and analysis.

APPENDIX

SOURCE CODE:

```
import 'package:flutter/material.dart';
import 'package:geolocator/geolocator.dart';

class LocationPage extends StatefulWidget {
  const LocationPage({Key? key}) : super(key: key);

  @override
  State<LocationPage> createState() => _LocationPageState();
}

class _LocationPageState extends State<LocationPage> {
  String? _currentAddress;
  Position? _currentPosition;

  Future<bool> _handleLocationPermission() async {
    bool serviceEnabled;
    LocationPermission permission;

    serviceEnabled = await Geolocator.isLocationServiceEnabled();
    if (!serviceEnabled) {
      ScaffoldMessenger.of(context).showSnackBar(const SnackBar(
          content: Text(
              'Location services are disabled. Please enable the services')));
      return false;
    }
    permission = await Geolocator.checkPermission();
    if (permission == LocationPermission.denied) {
      permission = await Geolocator.requestPermission();
      if (permission == LocationPermission.denied) {
        ScaffoldMessenger.of(context).showSnackBar(
            const SnackBar(content: Text('Location permissions are denied')));
        return false;
      }
    }
```

```
    if (permission == LocationPermission.deniedForever) {
      ScaffoldMessenger.of(context).showSnackBar(const SnackBar(
          content: Text(
              'Location permissions are permanently denied, we cannot request permissions.')));
      return false;
    }
    return true;
  }

  Future<void> _getCurrentPosition() async {
    final hasPermission = await _handleLocationPermission();

    if (!hasPermission) return;
    await Geolocator.getCurrentPosition(desiredAccuracy: LocationAccuracy.high)
        .then((Position position) {
      setState(() => _currentPosition = position);
    }).catchError((e) {
      debugPrint(e);
    });
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: const Text("Location Page")),
      body: SafeArea(
        child: Center(
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center,
            children: [
              Text('LAT: ${_currentPosition?.latitude ?? ""}'),
              Text('LNG: ${_currentPosition?.longitude ?? ""}'),
              const SizedBox(height: 32),
              ElevatedButton(
                onPressed: _getCurrentPosition,
                child: const Text("Get Current Location"),
              )
            ],
```

```
          ),
        ),
      ),
    );
  }
}
import 'package:flutter/material.dart';

import 'homePage.dart';

class Myapp extends StatefulWidget {
  const Myapp({Key? key}) : super(key: key);

  @override
  State<Myapp> createState() => _MyappState();
}

class _MyappState extends State<Myapp> {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text("FisherMan App"),
        centerTitle: true,
      ),
      body: Center(
        child: Padding(
          padding: const EdgeInsets.all(16.0), // Increased padding for better spacing
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center, // Center the column contents
            children: [
              TextFormField(
                decoration: InputDecoration(
                  labelText: "Latitude",
                  hintText: "Enter latitude",
                  prefixIcon: Icon(Icons.map), // Add an icon
                  border: OutlineInputBorder(), // Add border
                ),
              ),
```

```
            SizedBox(height: 16.0), // Add spacing between fields
            TextFormField(
              decoration: InputDecoration(
                labelText: "Longitude",
                hintText: "Enter longitude",
                prefixIcon: Icon(Icons.map_outlined), // Add an icon
                border: OutlineInputBorder(), // Add border
              ),
            ),
            SizedBox(height: 16.0), // Add spacing between fields
            TextFormField(
              decoration: InputDecoration(
                labelText: "Radius (in Meters)",
                hintText: "Enter radius",
                prefixIcon: Icon(Icons.circle), // Add an icon
                border: OutlineInputBorder(), // Add border
              ),
            ),
            SizedBox(height: 24.0), // Add spacing before the button
            ElevatedButton(
              onPressed: () {
                Navigator.push(
                  context,
                  MaterialPageRoute(builder: (context) => homePage()),
                );
              },
              style: ElevatedButton.styleFrom(
                shape: RoundedRectangleBorder(
                  borderRadius: BorderRadius.zero, // Box shape
                ),
                padding: EdgeInsets.symmetric(horizontal: 32.0, vertical: 16.0), // Adjust
padding
              ),
              child: Text("Add location"),
            ),
          ],
        ),
      ),
    ),
```

```
    );
  }
}
import 'package:flutter/material.dart';
import 'package:geolocator/geolocator.dart';

class homePage extends StatefulWidget {
  const homePage({Key? key}) : super(key: key);

  @override
  State<homePage> createState() => _homePageState();
}

class _homePageState extends State<homePage> {
  late Position lat;
  late Position lon;
  void _showAlert(BuildContext context) {
    showDialog(
      context: context,
      builder: (BuildContext context) {
        return AlertDialog(
          content: Card(
            elevation: 5,
            shape: RoundedRectangleBorder(
              borderRadius: BorderRadius.circular(10),
            ),
            child: Padding(
              padding: const EdgeInsets.all(20.0),
              child: Column(
                mainAxisSize: MainAxisSize.min,
                children: <Widget>[
                  Text(
                    'Alert',
                    style: TextStyle(
                      fontSize: 24,
                      fontWeight: FontWeight.bold,
                    ),
                  ),
                  SizedBox(height: 10),
```

```
              Text(
                'You are entering restriced place',
                style: TextStyle(
                  fontSize: 16,
                ),
              ),
              SizedBox(height: 20),
              ElevatedButton(
                onPressed: () {
                  Navigator.of(context).pop();
                },
                child: Text('OK'),
              ),
            ],
          ),
        ),
      ),
    );
  },
);
}
```

```
@override
Widget build(BuildContext context) {
  return Scaffold(
    floatingActionButton: FloatingActionButton(onPressed: (){
      _showAlert(context);
      // Navigator.push(context, MaterialPageRoute(builder: (context) => Myapp(),));
    },child: Icon(Icons.add),),
    appBar: AppBar(title: Text("FisherMan App"), centerTitle: true,),
    body: Center(
      child: Column(
        children: [
          SizedBox(
            height: 250,
```

```
            ),
            Text("Latitude  : 13.067439",style: TextStyle(fontSize: 20),),
            SizedBox(
              height: 20,
            ),
            Text("Longitute : 80.237617",style: TextStyle(fontSize: 20),)
          ],
        ),
      ),
    );
  }
}
```

REFERENCES

[1] **Neuroevolution of Augmenting Topologies (NEAT: A Genetic Algorithm for Evolving Neural Networks)**, Kenneth O. Stanley and Ronald J. D. Pieterse, MIT Press, Year: 2002, Pages: 199-206.

[2] **Applied Neuroevolution: Artificial Intelligence Through Evolving Neural Networks**, Leonardo V. Bottaci, Springer,

Year: 2016.

[3] **Genetic Programming Theory and Practice**, Wolfgang B. Langdon, Springer, Year: 2019.

[4] **Artificial Neural Networks: A New Approach to Artificial Intelligence**, Michael C. Jordan and James R. Anderson, MIT Press, 1989.

[5] **An Introduction to Neural Networks**, Kevin Gurney, CRC Press, Year: 1997.

[6] **Reinforcement Learning: An Introduction**, Richard S. Sutton and Andrew G. Barto, MIT Press, Year: 1998.

[7] **Artificial Intelligence: A Modern Approach**, Stuart Russell and Peter Norvig, Pearson, Year: 2020.

[8] **Artificial Intelligence and Machine Learning for Engineers and Scientists**, Haykin, Simon, Pearson Education India, Year: 2020

[9] **Deep Learning**, Ian Goodfellow, Yoshua Bengio, and Aaron Courville, MIT Press, Year: 2016.

[10] **Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow**, Aurélien Géron, O'Reilly Media, Year: 2019.