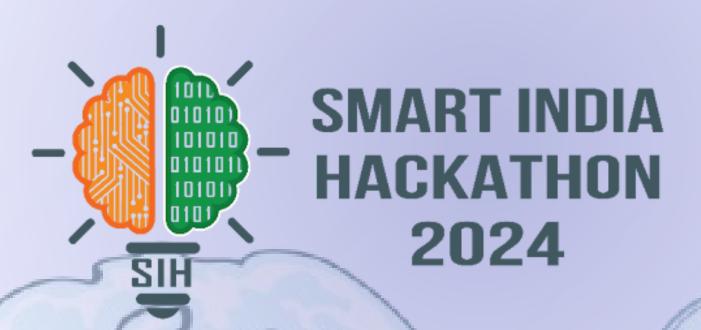


A Mobile App for Monitoring Coastal Tourism Safety

PROBLEM STATEMENT TITLE - DEVELOPMENT OF A MOBILE APPLICATION TO PROVIDE RECREATIONAL SUITABILITY INFORMATION OF BEACH LOCATIONS ACROSS INDIA.



**Problem Statement ID** – 1656

Theme- Travel & Tourism

**PS Category-** Software

**Team ID** - 31180

Team Name - BENZENE 2.0

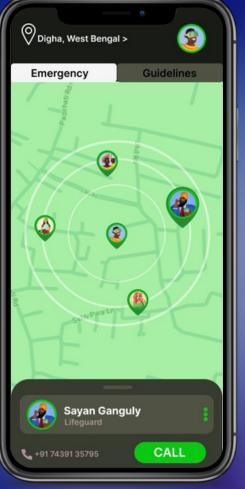
# SOLUTION

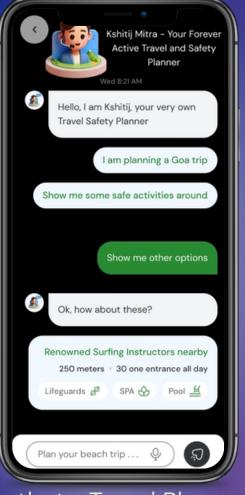


Presenting Kshitij, a one-stop platform to guarantee safety and best experiences for all beach tourists across the country by the dint of APIs, Machine Learning and Geospatial visualization of target locations.









**Beach Landing Page** 

Beach Suitability Map

Instant Helpline

Chatbot - Travel Planner

Available Solutions in the market	Realtime weather & Tide Information	Geo spatial Map Visualization	Realtime Alert Notification	Live Suitability Status	Live Location Sharing & Safe zone	AI Powered ChatBot & Travel Planner	Community Feature & user Generated Alerts
Kshitij (our app)	<b>*</b>						
My Coast	<b>*</b>	<b>V</b>	×	X	X	X	X
Beach Safe India	<b>*</b>	<b>*</b>	×	<b>*</b>	X	<b>*</b>	X
Lifeguard Connect	<b>*</b>	X	<b>*</b>	X	<b>*</b>	X	<b>✓</b>
Beach Flags	X	<b>*</b>	X	X	×	X	X

### How Kshitij streamlines your beach venture?



### 1. Safety Profiling

Kshitij leverages the abilities of machine learning to classify locations and activities into categories of safe, unsafe or moderate, so users can make quick decisions.

### 2. Geospatial Visualization



Fully furnished Geospatial maps are integrated into the very system of the app to make the visibility of safe and troubled zones easier.

### 3. Prompt Alerts



With a single click, users are empowered to share their live ocations with their SOS contacts, aiding both families and NDRF in cases of emergencies.

### 4. Crowd Reporting



Allowing users to generate their own reports based on their experiences on a beach, properly moderated by community notes, empowering users to act like on-ground reporters.

### 5. Real-Time Info



Our solution seamlessly integrates requests to up-to-date relevant APIs like INCOIS, WeatherBit etc to let the user be be wary of any environment /weather turmoil

#### 6. Furnished with Al



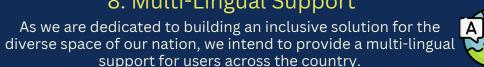
Our very own travel planner chat bot leverages latest fine-tuned Gen AI models to provide one-of-a-kind interactive experience to users planning their future beach trips.

### 7. Community



A holistic and inclusive community, which is properly moderated to ensure tourists can make acquaintances close to their places of visit...

### 8. Multi-Lingual Support





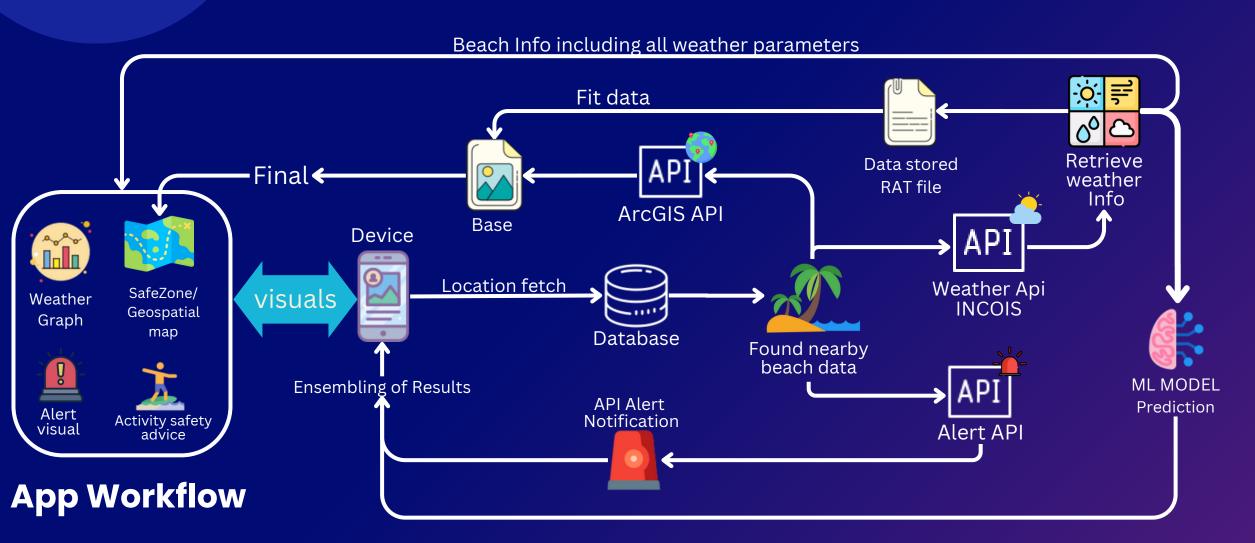
Hi! I am Kshitij-Mitra. Your personal Al Travel Planner

**Prototype Link ->** 

ML Models ->

**Demo Video->** 

# FLOWCHART & TECHNOLOGY STACK



### **Application**

**Android** Native app development using **Android Studio** Kotlin XML

### **Backend**

Django **Python** using)

### **Database**

Firebase Cloud Messaging (for push notifications

**PostgreSQL** 

### Cloud

**Amazon Web** Services

(for hosting and services like EC2 for hosting)

### Geospatial

ArcGIS

(for interactive geospatial map visualization)

### **API**

**INCOIS** (for real-time ocean and weather data)

Weatherbit

ArcGis

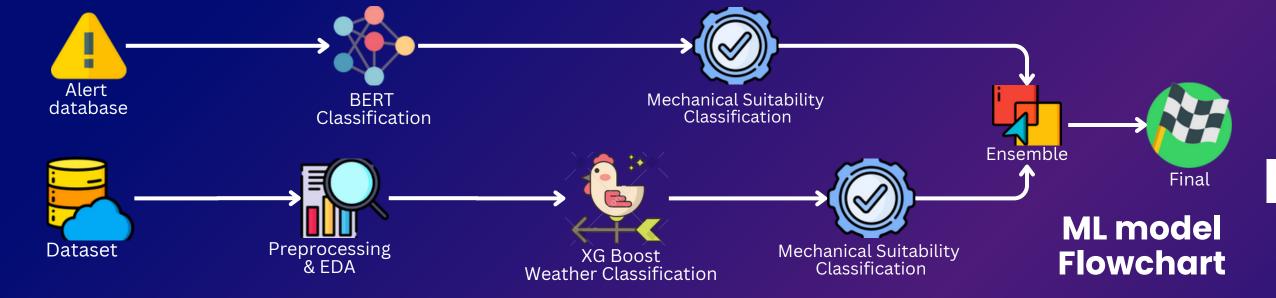
**Stormblast** 

### ML and Al

Pytorch (for machine learning models)

**Hugging face** Langchain for natural language processing

Llama3.1













Langchain



**INCOIS API** 











# FEASIBILITY & VIABILITY



### **Technical Feasibility**

- Ensures real-time data retrieval with minimal delays.
- Critical for timely and accurate safety alerts.
- High accuracy models for predicting beach suitability.
- Efficient algorithms optimized for mobile platforms.





### **Legal Feasibility**

 Compliance with data protection regulations to safeguard tourist privacy.



## Potential Challenges and Risks

 Risk of users not receiving timely warnings due to unexpected events that might not get traced yet.

# Solutions to Overcome Challenges

 Providing a separate Report section for individual tourists wherein they can update any unexpected weather anomalies nearby.

### **Business Feasibility**

Partner with local
businesses (e.g., hotels, restaurants) and travel
agencies





### **Market Demand**

 High demand for safety information among tourists, ensuring widespread adoption.



 Unique integration of realtime data with user-friendly geospatial mapping, setting the app apart from existing solutions.





### Scale

 To scale for future load we propose Horizontal scaling techniques which works effectively with multiple instances. To achieve this we deploy using EC2 amazon webservice which provides the benefit of elasticity.

# SMART INDIA HACKATHON 2024

# MPACTS & BENEFITS



Send SOS

**Helpline Numbers** 

**View Safe Zones >** 

Pop up for crisis situations



Weather-based precautions

Beach and saf

Beach Patrol and safety zones



Social

User-friendly interface: customized recommendations

Map visualization & data graphics

Real-time weather updates

Nearby safe activities suggestions

Chatbot: Recreational Travel Planner

> Multilingual Support

Safety guidelines for tourists



**Tourist Safety**: Provides timely alerts and precautions, potentially saving lives and preventing accidents.



**Public Awareness**: Informs users about oceanic conditions, fostering a safety-conscious society.

### **Economic**



**Boost in Tourism**: Safer tourism attracts more visitors, increasing revenue for local businesses.



**Cost Savings**: Prevents accidents, reducing emergency response and healthcare costs.

### **Environmental**

**Sustainable Tourism:** Saves resources helping tourists pick sustainable recreational activities, thus preventing environmental degradation.

**Data-Driven Decisions**: Uses real-time data to promote responsible use of natural resources and sustainable practices.

# RESEARCHAND REFERENCES



### Referred Research Papers

A deep-learning model for rapid spatiotemporal prediction of coastal water levels (2)

<u>Deep Learning-Based Weather Prediction: A Survey(2)</u>

## **App References**













Beach Flags(2)



## Our Approach

Prototype (2)

Figma Prototype UI Design.

ML Models (⊘)

Weather Prediction and Alert Based Classification Model

<u>Demo Video</u> (⊘)

Youtube Demo Video Link