

Innervate X

RakshakNet: AI-Powered Threat Intelligence

Team name: TRISHAKTI-33

Theme: Defense & Innovation

City: Pune, Mumbai

State: Maharashtra



PROBLEM STATEMENT

The **Siliguri Corridor** is a critical 22 km strategic chokepoint where **low visibility, dense terrain, and multi-border pressure** create major blind spots in real-time threat and **infiltration detection**.



Why This Is a Problem?



Strategic Sensitivity

- Only ~22 km wide
- Key link between **mainland India** and the **Northeast**
- High **geopolitical tension**



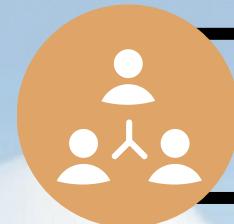
Monitoring Challenges

- Dense fog, **low visibility**, forest cover
- Complex **terrain** restricts full surveillance
- Heavy **troop** and **civilian** movement



Limits of Current Surveillance

- Mostly reactive, not predictive
- Relies on visible **anomalies**
- No system combining **weather, satellite, & movement intelligence**



KEY FEATURES

Central Dashboard

Provides security forces with instant risk zone visibility.

Automated Alert System

Sends SMS, audio, and app notifications when risk exceeds limits.



Multiple Data Sources

Uses satellite images, weather updates, crowd data, and incident records.

Real-time AI Model

Studies terrain, movement, weather, and past incidents.

Live Heatmap

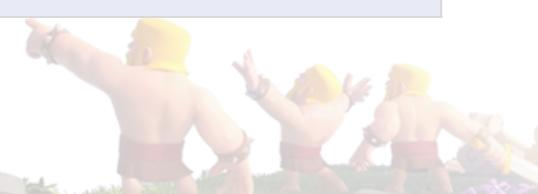
Shows high-risk areas for infiltration or suspicious activity.

PROPOSED SOLUTION



WHAT MAKES US DIFFERENT?

Feature Area	Description
Predictive Intelligence	Estimates future risks instead of reacting after incidents occur.
Anomaly Detection	Detects unusual crowd or movement behavior automatically.
Satellite Change Analysis	Identifies subtle terrain or activity changes over time.
Dynamic Risk Scoring	Combines weather , terrain , mobility , and past data into one risk score.
Lightweight System	Works on local servers or low-cost cloud infrastructure .
Scalable Design	Can be deployed across any border or conflict zone in India.



SCALABILITY

IMPACT & FEASIBILITY



Geographic Expansion



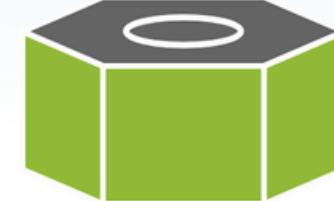
Ability to cover entire India, including LOC and LAC



User Capacity

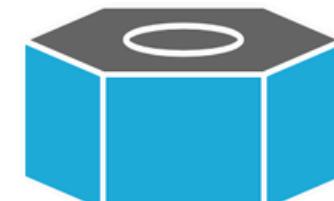


Capability to handle multiple users simultaneously



Data Source Support

Integration of drones and military sensors for data



Aspect

Description

Early Risk Detection

Shows **risky areas** early so forces can act before any incident happens.

Soldier Safety

Reduces **blind patrolling** and **false alerts**, improving safety.

Faster Decisions

Helps commanders decide quickly using a **single dashboard** and **heatmap**.

Practical Technology

Uses common data and tools like **weather APIs**, **satellite images**, and **Python ML**.

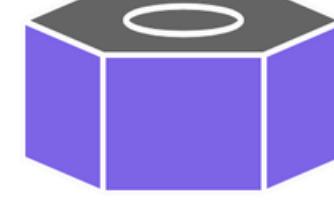
Easy Deployment

Simple to **build**, **test**, and **scale** without **special hardware** or **sensitive equipment**.

AI Accuracy Improvement

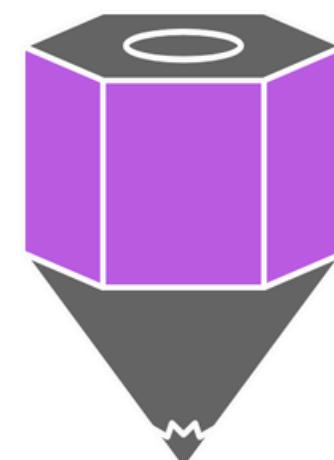


Self-improving system that enhances accuracy over time



Multi-Region Tracking

Simultaneous monitoring of various regions



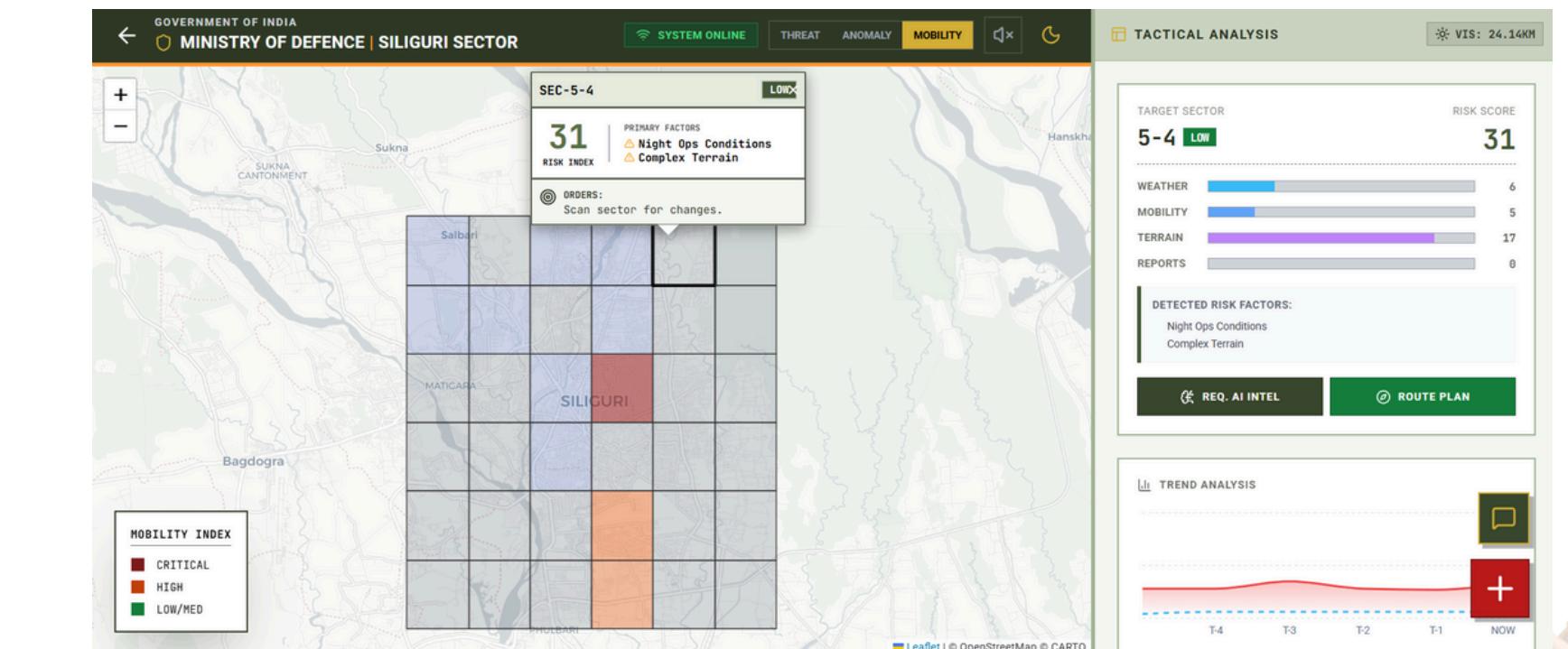
SOCIAL / MARKET IMPACT

- Enables **faster life-saving response**, improving **soldier safety** in remote and high-risk areas.
- Creates a dependable **emergency-response platform** with applications in **defense** and **disaster management**.

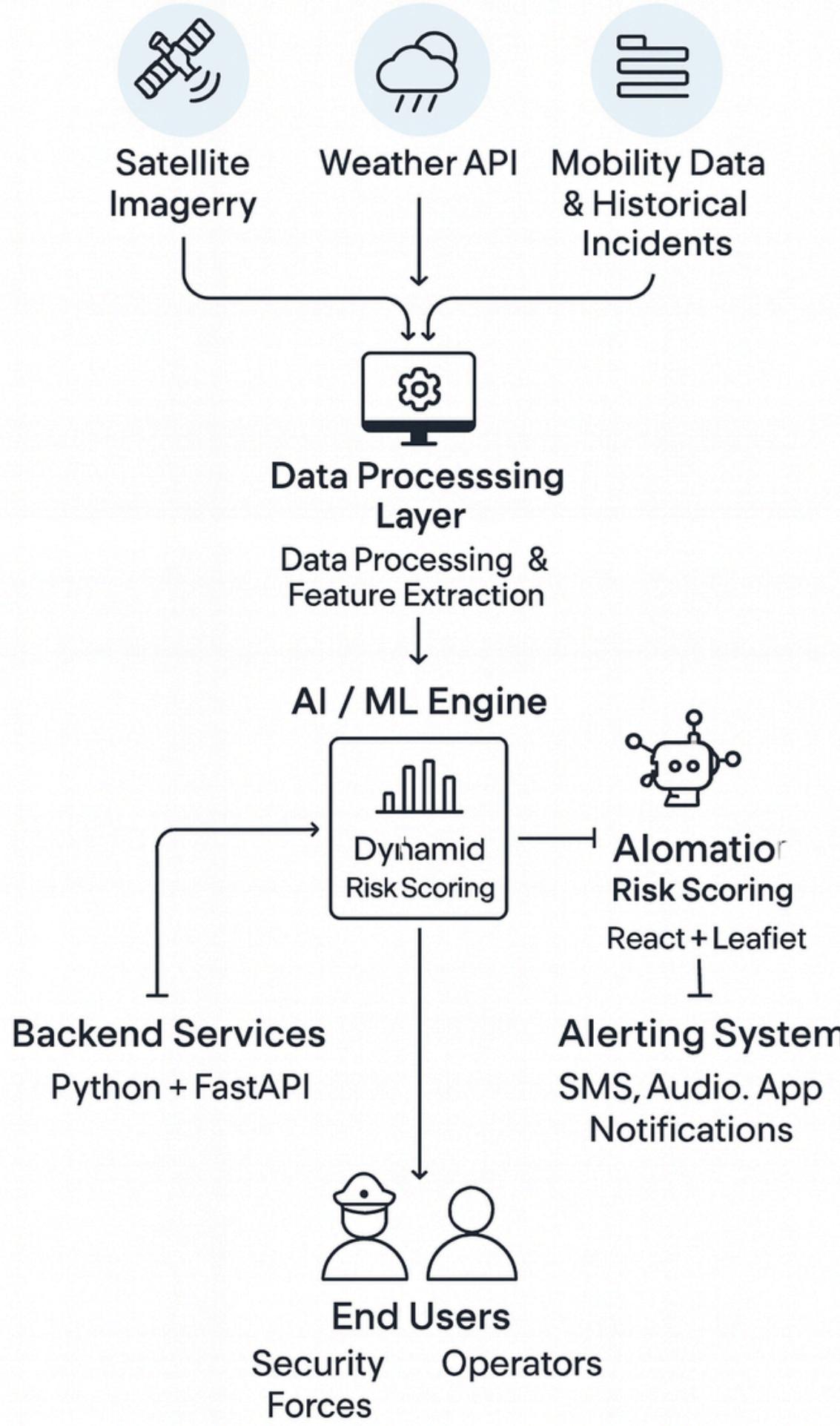
TECHNICAL APPROACH

- **Data Layer**
 - Weather API, **Sentinel satellite** imagery
 - Mobility / **movement data**, Historical incident data
- **Processing Layer**
 - Data cleaning, Feature extraction
 - **Anomaly detection** using:
 - Isolation Forest
 - Autoencoders
- **Risk Engine**
 - Weighted **risk scoring model**
 - Combines real-time **inputs** with **historical features**
- **Visualization Layer**
 - **Threat heatmap** generation
 - GIS-based map using Leaflet.js / Mapbox
 - Central dashboard for monitoring
- **Alerting Layer**
 - Threshold-based **alert system**
 - **SMS/audio alerts** using APIs like Twilio or Notify

TECH STACK



ARCHITECTURE

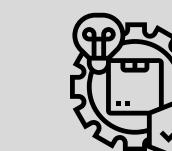


REFERENCES

- [AI Based Threat Detection – Border](#)
- [Satellite Images for Weather](#)
- [AI-Based Satellite Surveillance & Border Threat Modeling](#)
- [Hybrid Multi-Activity Detection for Border Monitoring](#)



USEFUL LINKS



PROTOTYPE



VIDEO



DEMO

THANK YOU

TEAM

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