

AI CITY SCOUT



THE THINKING BRAIN OF A CITY IN CRISIS

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PROBLEM



1

Cascading Risks

- **Earthquake → Power Outage → Hospital Overload → Viral Misinformation → Unsafe Evacuation**

2

What Went Wrong?

- **Misinformation spread** rapidly on social media
- **Disconnected** sensor and hospital **data**
- **No central coordination layer** (unified dashboard/trusted source/automated)

3

What It Cost Us? (Simulated Impact)

- **10M+** exposed to misinformation of disasters
- **1%** of residents attempted to evacuate due to misleading evacuation alert
- **20-30 mins** avg. delay in response in rural communities for 911 response

What if an AI system could connect the dots - faster than the chaos spreads?

EXECUTIVE SUMMARY

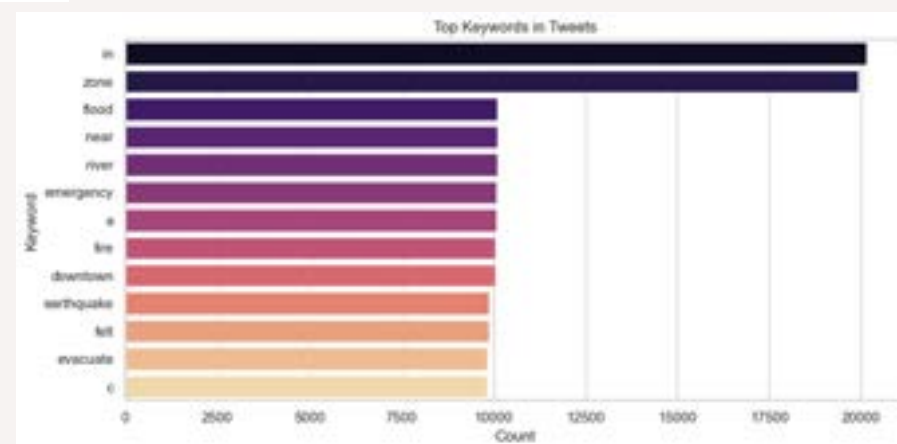
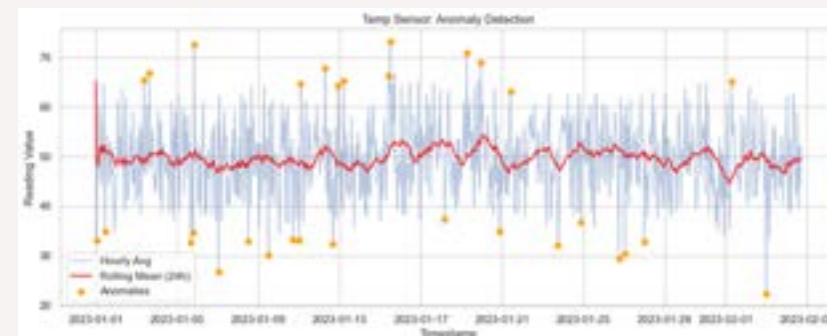
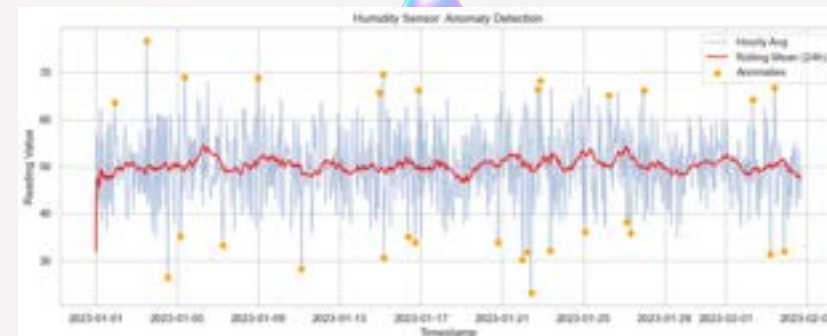
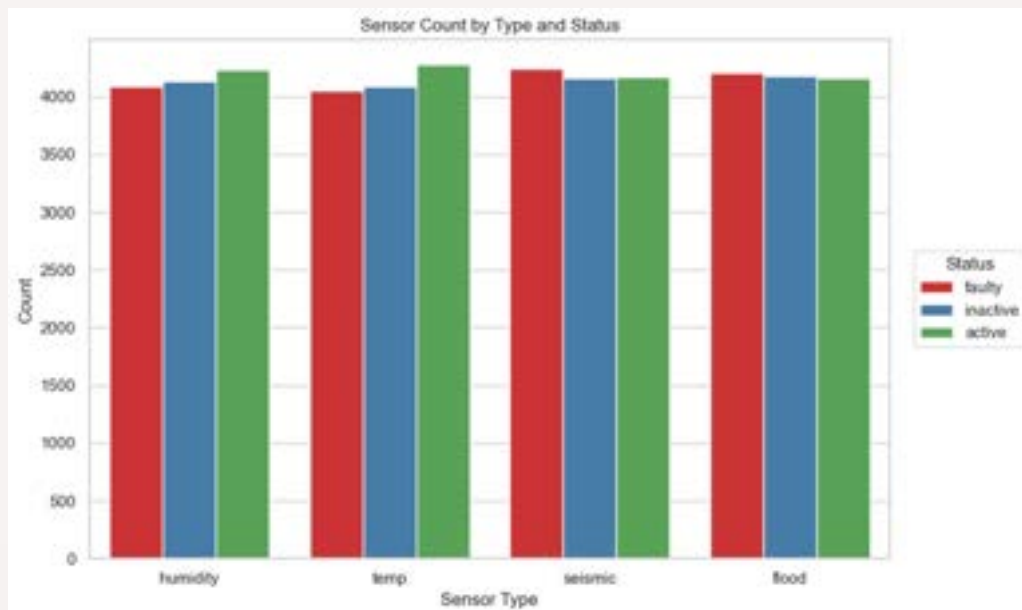
AI City Scout is a real-time disaster intelligence platform designed to help cities detect, predict, and respond to natural crises and misinformation – enabling faster decisions and smarter city resilience strategies.

The system includes three key modules:

- **Future Predictions** for real-time disaster forecasting and hospital risk assessment
- **Social Media Detector** to flag or validate disaster-related tweets
- **Past Disasters** for discovering historical pattern



MULTIMODAL EDA



1

Merged Multimodal Data

Integrated **5 diverse data streams** — sensors, weather, energy, social media, and historical disasters

- **Time gap**: disasters from 2010–2015, real-time data from Jan–Feb 2023
- Past disasters to **simulate** cascading risks, and 2023 data for **validation**

2

Patterns + Challenges in EDA

- Sensor signals show stable baselines with occasional anomalies
- Tweet volume reveals **trending crisis-related keywords** (e.g., “flood,” “evacuate”)
- Weather variables have **weak direct correlation** with sensor readings
- No strong single-modality signals → **motivates multimodal modeling**

MODEL INTEGRATION

Real-Time Risk Detection

When sensor readings go weird, we detect it before it gets real

Data	Real-time disaster sensor + weather data (Jan–Feb 2023)
Target	Detect anomalous spikes in + weather
Model	IsolationForest
Result	risk_level = High or Normal Used to trigger blackout prediction , map alerts

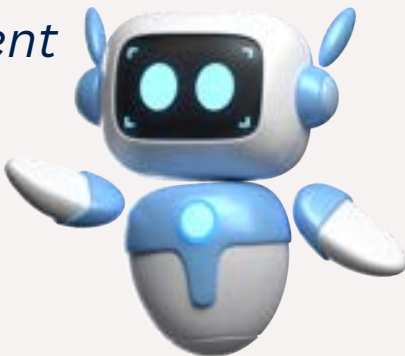
*Since **sensor readings** are normalized (0–100), we convert them into **severity levels (1–9)** to enable downstream **hospital overload prediction**. Different disaster types use different severity mapping standards*

Hospital Overload Risk

Not all disasters are equal – we predict which ones may overwhelm hospitals.

Data	disaster_events.csv (2010–2015), city_map.geojson
Target	Whether disaster triggers hospital overload (label = 1 if casualties >10 or economic loss > 75th percentile)
Model	RandomForestClassifier Chosen for robustness, feature explainability, and performance on tabular data
Result	Accuracy: 92% Key insight: Floods near hospitals with severity ≥6 are top overload triggers

This powers our response prioritization – we know which events need immediate attention.



MODEL INTEGRATION

NLP + GPT IN CRISIS RESPONSE

Fake Tweets Detection

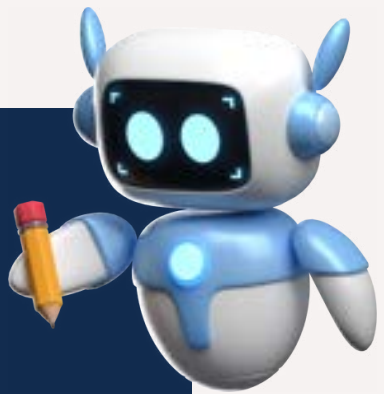
- Utilizes a **BERT-based language model** fine-tuned for disaster tweet classification
- Extracts both **disaster type** (e.g., flood, fire) and **emotional urgency** (e.g., panic, call for evacuation)
- Integrates location and timestamp validation with sensor + weather data
- Flags posts as **fake** if no physical evidence is found within 3 km radius

OpenAI GPT Action Generator:

- **Input:** Disaster type + severity + overload risk
- **Output:** AI-generated emergency response plan
- Enables **natural language decision** support on the map

TECH STACK

- **ML:** RandomForestClassifier (disaster → overload risk), IsolationForest
- **Geo:** Folium, GeoPandas, geopy
- **Weather/Sensor Parsing:** Pandas, datetime
- **NLP:** Conflict/fake news detection (social media)
- **AI:** OpenAI GPT (response generation)
- **Frontend:** Streamlit



DEMONSTRATION

[Video Link](#)

AI City Scout

Social Media Fake Post Detector

Enter the details of a tweet below. The system checks for disaster-related keywords in your tweet and then verifies if there are any sensor readings around the provided time and location. If no sensor data supports a disaster in that context, or if the claimed disaster type does not match the sensor reading, the tweet is flagged as fake.

Select Tweet Date

2023/01/12

Select Hour

0

23

Tweet Text

fire detected

Tweet Latitude

37.610000

Tweet Longitude

-121.830000

Check Tweet

Real Tweet: Detected fire disaster in sensor data.

Detect fake tweet by user’s input of time, location and text

AI City Scout

Disaster Predictions Dashboard

Gain insights into potential disasters using real-time sensor and weather data. Our predictive analytics module helps city officials and emergency responders prepare proactive response strategies.

Disaster Type Legend

- Flood: Blue
- Earthquake: Orange
- Fire: Red
- Hurricane: Purple

Select Date

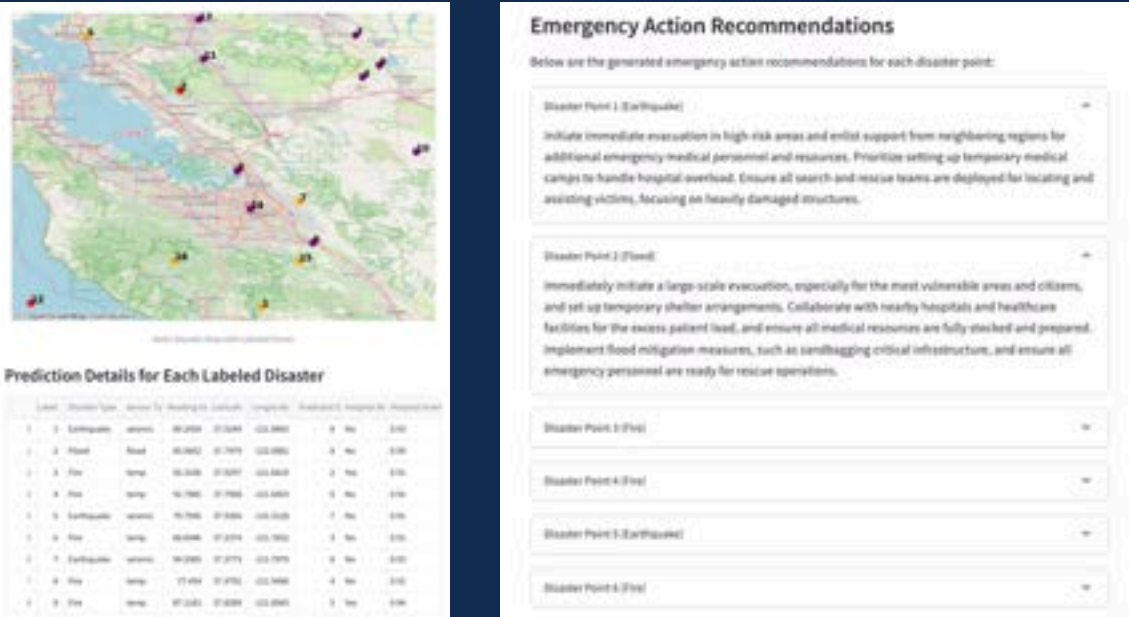
2023/01/01

Select Hour

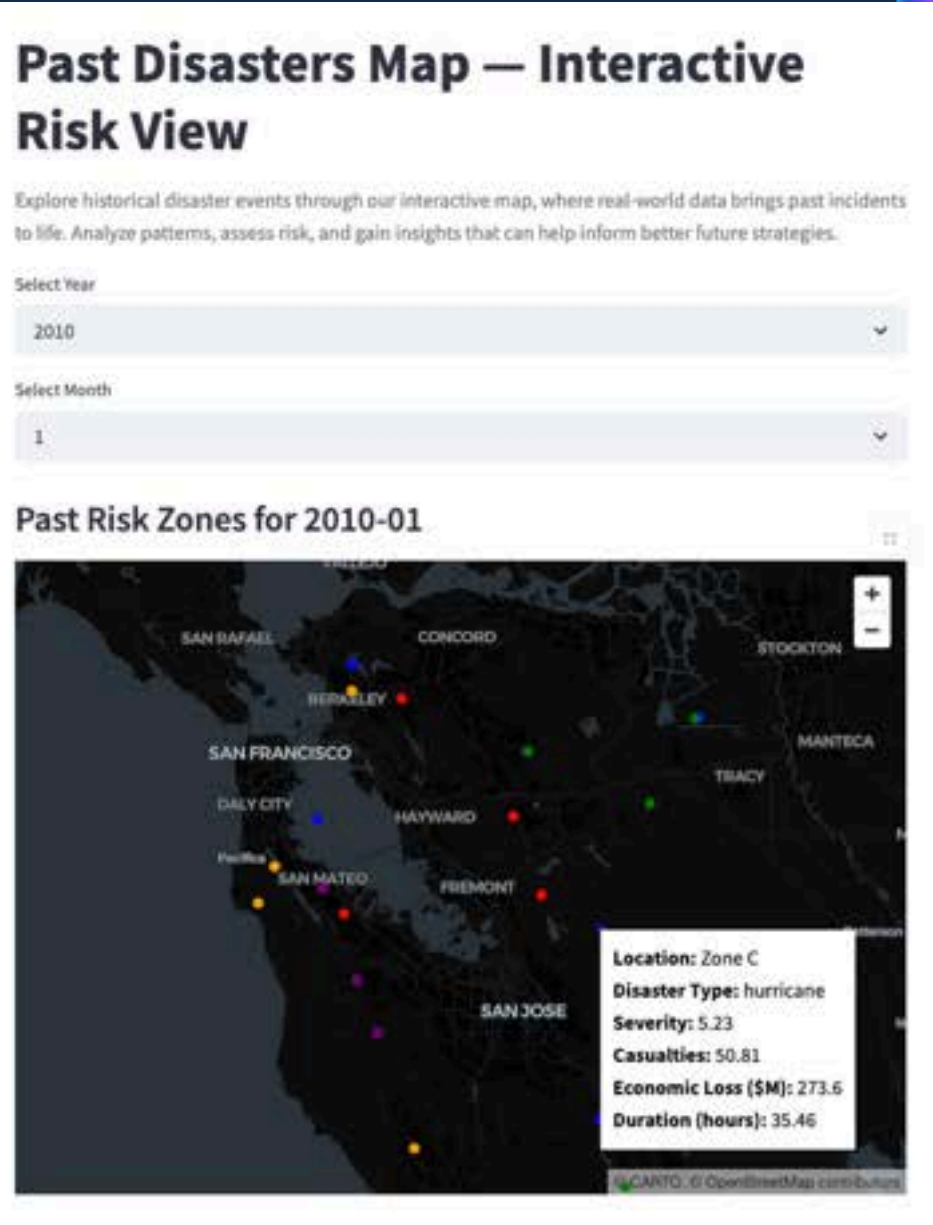
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23

Generate Predictions



Predict future disasters from user’s time input, showing possible results, generating strategic plans



Show past disasters on interactive map with results

FUTURE IMPACT

BEFORE AI CITY SCOUT

Reactive post-disaster response

Manual coordination

No detection; False alerts circulate widely

Fragmented data, expert-only tools

AI CITY SCOUT FEATURES

Predict disasters before impact

Recommends immediate actions with AI

Validates social media posts

User-friendly interface

WITH AI CITY SCOUT

Real-time alerts **up to hours**

Instant GPT-4 based action plans in seconds, **99.7%** faster

>90% accuracy in tweet validation, reducing public panic

Unified dashboard, Usable by non-technical officials in **<5 mins** of training



THANK YOU!
ANY QUESTIONS?

APPENDIX



<https://time.com/7205996/evacuation-alert-error-phones-los-angeles-county-fires>

https://en.wikipedia.org/wiki/Emergency_Alert_System?utm_source=chatgpt.com

<https://www.brookings.edu/articles/fighting-hurricane-misinformation-requires-aggressive-pushback>