

AI CITY SCOUT



THE THINKING BRAIN OF A CITY IN CRISIS

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PROBLEM





- 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 Al system could connect the dots
SBA
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





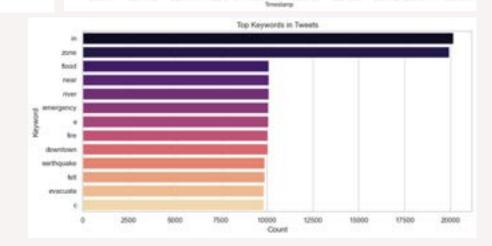


MULTIMODAL EDA











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**

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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



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

Since **sensor reading**s 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

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

OpenAl 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

Al City Sco	ut
Social Media Fake Pos	t Detector
Enter the details of a tweet below. The system checks for disaste verifies if there are any sensor readings around the provided tim a disaster in that context, or if the claimed disaster type does no flagged as fake.	ne and location. If no sensor data supports
Select Tweet Date	
2023/01/12	
Select Hour	
0	2
Tweet Text	
fire detected	
Tweet Latitude	
37.610000	- •
Tweet Longitude	
-121.830000	- *
Check Tweet	
Company of Association	

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



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 strategles. Disaster Type Legend Flood: 8kue Earthquake: Orange Fire: Red Hurricane: Purple Select Date 2023/01/01 Select Hour	Al	City Scout	
Disaster Type Legend Flood: Size Earthquake: Orange Fire: Red Hurricane: Purple Select Date 2023/01/01 Select Hour	Disaster Predi	ctions Dashb	oard
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Disease Point J (Earthquake)	
initiate immediate execution in high-risk areas and entité support additional emergency medical personnel and resources. Prointice s camps to handle hospital overheat. Draws all search and rescue to assisting victims, focusing on heavily damaged structures.	etting up temporary medical
Stude Feld 2 Flord	
immediately initials a large-scale execution, especially for the mer and set up temporary shallor arrangements. Calibbride with nearly facilities for the excess patient fixed, and ensure all medical resours implement flood mitigation measures, such as sandhagging critical envergency personnel are ready for rescue spensions.	y hespitals and healthcare re are fully stecked and prepared
Disaster Point 3 (Fire)	
Stanter Point & Shell Stanter Point & Shell	

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

Past Disasters Map — Interactive Risk View

Explore historical disaster events through our inter	ractive map, where real-world data brings past inciden
to life. Analyze patterns, assess risk, and gain insigt	hts that can help inform better future strategies.
Select Year	
2010	Ÿ
Select Month	
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Past Risk Zones for 2010-01	
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	Location: Zone C
	SAN305E Severity: 5.23

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 nontechnical officals in <5 mins of training





THANKYOU! 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



