Cascade Crisis AI at the Edge of Collapse

By Hackers Worldwide

The Journey We Took

The Minds Behind the Mission

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When Everything Fails, What Thinks?

One event can trigger a chain reaction floods cause power outages, earthquakes spark fires, hospitals overflow.

Cities lack a system to:

- Anticipate cascading disasters
- Interpret early signals from sensor data
- Cut through misinformation in real time

During a crisis, decisions must be fast, explainable, and correct.

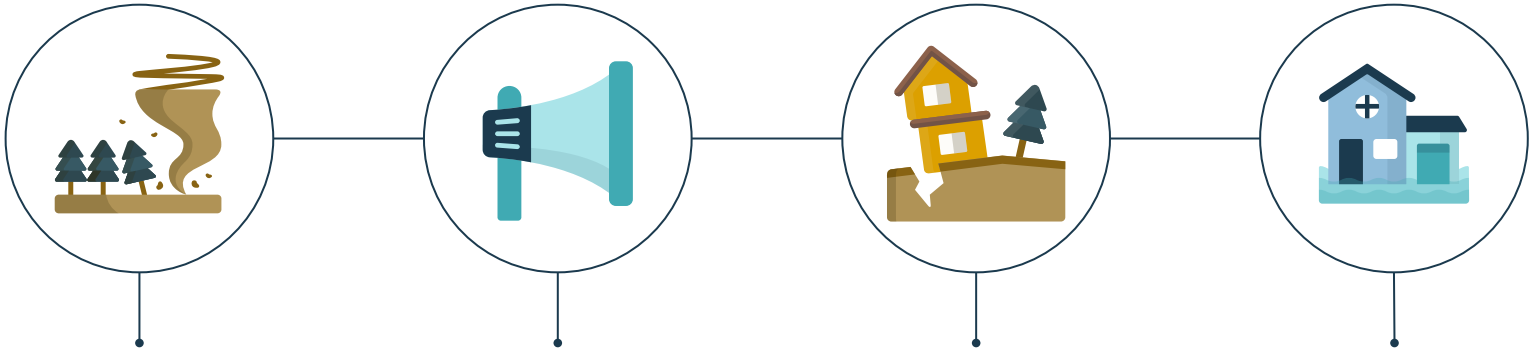
Our Mission: be the AI that sees what's next before it's too late.

Here is what we are up against...

It's 2:17 AM.
Flood sensors are screaming in Zone C.
Hospitals are maxed out.
A fake tweet of the mayor goes viral: "Do not evacuate."
Power outages across neighbourhoods due to a cyberattack.

HOW ARE WE GOING TO GET BACK TO SAFETY!?

What We Built: From Disaster to Decision



Step 1

Cascading Prediction

Detects disaster chains in motion (e.g., flood → outage → overload), using location, energy, and historical data

Step 2

Misinformation Filtering

Detects fake tweets and verifies critical updates in real time using NLP and truth signals.

Step 3

Hotzone Mapping

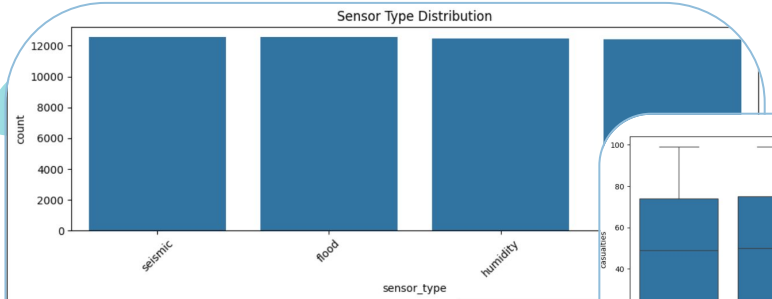
Clusters nearby incidents into high-risk zones using DBSCAN instantly reveals where chaos is building.

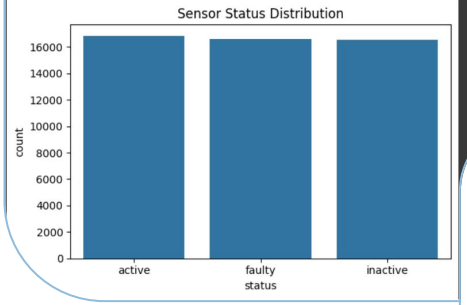
Step 4

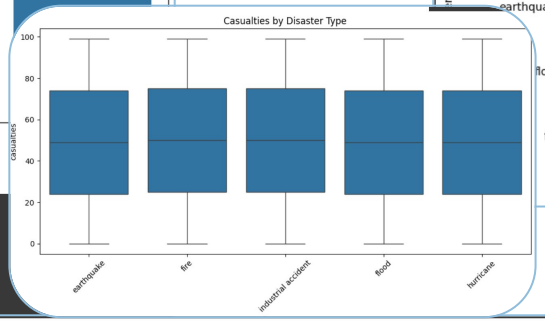
Smart Routing

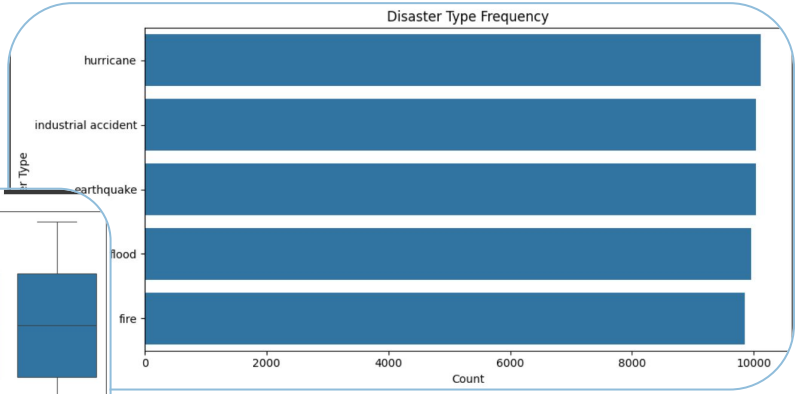
Recommends the nearest hospital, fire station, or shelter with warnings if help is too far (⚠️ >4 km).

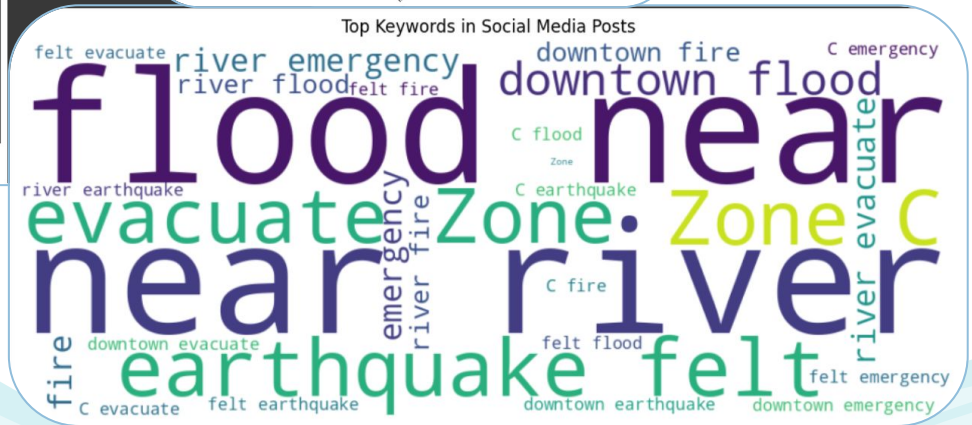
Signals in the Chaos











We explored patterns across sensors, social chatter, and disaster history, decoding what the city is really trying to say.

Sensor Chaos Meets Tweet Storm

So much data... which features actually matter?

Through our careful exploratory data analysis, we filtered the active sensors only and merged with disaster data, energy information and social media activity for well-informed predictions. Right below shows the main features that were merged together and used as part of our EDA.

Timestamp	Reading Value	Text	Tweet Latitude	Tweet Longitude	Casualties	Economic Loss	Zone A	Zone B	Zone C	Zone D
2023-01-01 0:03:00	19.157472	flood near river	37.217171	-121.747097	0	283.082462	FALSE	FALSE	FALSE	TRUE

We Think Like Disasters Strike

Our AI works like a cascade, mimicking how events unfold in real life, making it super smart.

Here is how it works →

Merge & Map

↓

Detect Floods

↓

Check Power

↓

Monitor Hospitals

↓

Filter Fake News

↓

Score Risk

↓

Recommend Actions (LLM)

Turning Theory into Real-Time Action

Inputs for our situation

Latitude: 37.7749 (SF location)

Longitude: -122.4194 (SF location)

Estimated Economic Loss ($): 400M

Sensor Reading Value: 90 (screaming!)

Zone: C

Tweet Text: *"For everyone impact by the flood, please evacuate now"*

Output

Predicted Disaster: "flood", "Predicted Energy (kWh)": ***234.05***

Predicted Casualties: ***49.22***

Power Outage Likely: "False"

Tweet Flagged as Fake News: ***true***

Fake News Probability: ***0.63***

Emergency Instructions: ...

Under the Hood of Crisis AI

Random Forest Classifier + Regressor

TF-IDF + Logistic Regression (Calibrated) + Calibrated classification

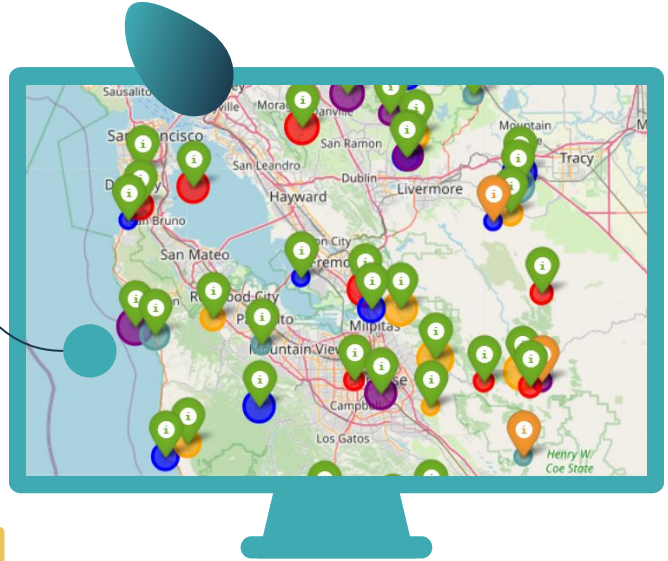
Map Mind: Disaster Ground Truth, Visualized

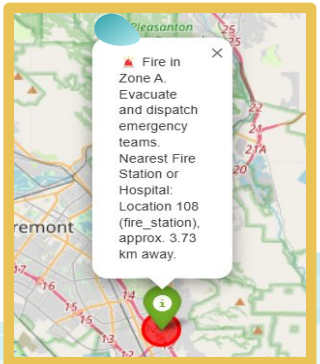
They gave me a map. I turned it into a mission.

When the city starts to break, I don't just sound the alarm I open the map.
Fires, floods, industrial accidents - I cluster them using geospatial logic, where clustering
One isolated event? I respond.

Two? I react.

Three stacked disasters in the same radius? I escalate.





What Tried to Break Us (But Didn’t)

Data Mayhem

Sensor values were missing, noisy, or just wrong. We cleaned, merged, and inferred what the chaos couldn’t tell us.

Real-Time Pressure

Everything had to work together prediction, verification, mapping, explanation instantly.

01 02 04 03

Misinformation Storm

Tweets came in faster than facts. We trained the model to spot fakes before panic spread.

Far-Flung Infrastructure

What if the nearest hospital is 6.5 km away? We flagged it and advised mobile or rerouted response.

Beyond the Crisis

structuredlabs clay ContextQA

Smarter Cascading Predictions

What's next: Rolling it out piece by piece. With a Structured Labs-style setup, cities could plug in Cascade AI just like adding new tools to their system, quick, smooth, and ready to go.

Nationwide Crisis Dashboard

Looking ahead: Think Clay-style coordination. Imagine every hospital, shelter, and response team as a smart contact: automatically alerted, routed, and kept in the loop by the AI.

AI-Guided Public Communication

And beyond: Misinformation evolving, tomorrow it won't just be tweets, it'll be AI fakes. Inspired by ContextQA, we're aiming to check not just the message, but the model behind it.

Now... The Interface!

No need to be a data scientist to be informed!

*Our simple and smart **Streamlit** interface is here to make your experience less stressful in case of natural disaster.*

LIVE DEMO!

Thank you!

**“In a world of chaos, I don’t just detect the disaster.
I help decide what happens next.”**

— Cascade Crisis AI