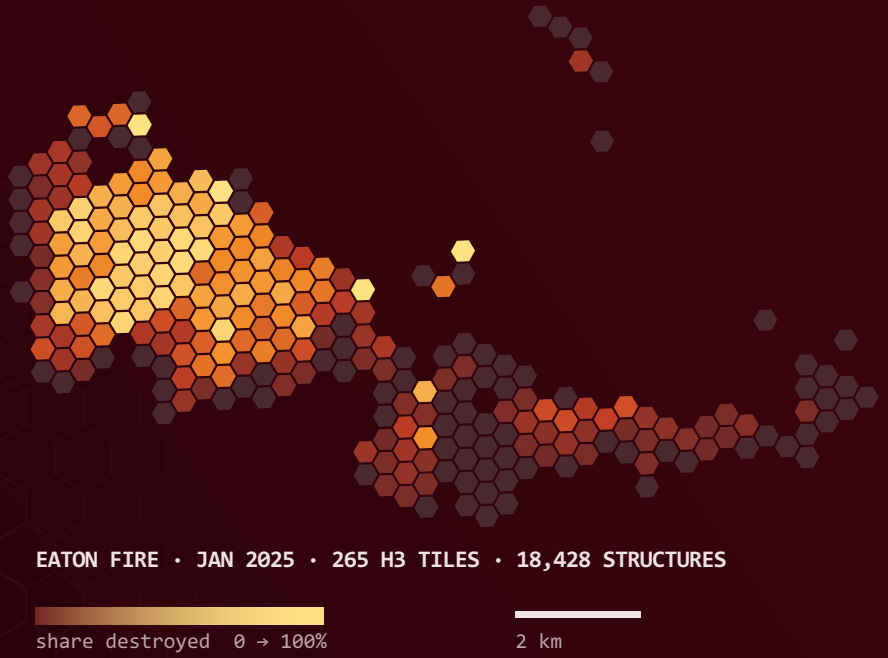
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RAY

Resilience Assistant for You

An Accountable GeoAI Agent for
Place-Based Disaster Intelligence

Yifan Yang, Ph.D. Candidate
Advisor: Dr. Lei Zou · Department of Geography, Texas A&M University
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GEAR Lab
Explore & Resolve

Problem & Approach

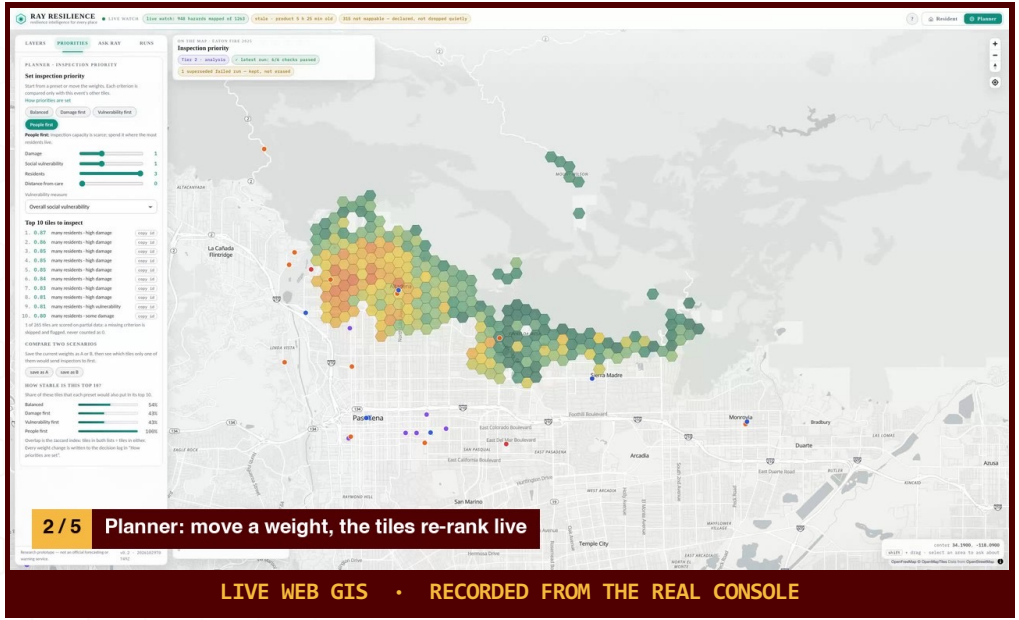
The language model plans, GIS tools compute, a harness checks

Planner county emergency office
› Where do the inspection teams go first?

Resident after the fire
› What is known about my own street?

Both are GIS questions. Few who ask can run the analysis, and numbers written by a language model are hard to verify.

4 disasters | **1** H3 grid | **11** spatial tools



Steward Harness the code between the model and everything else (maroon steps)

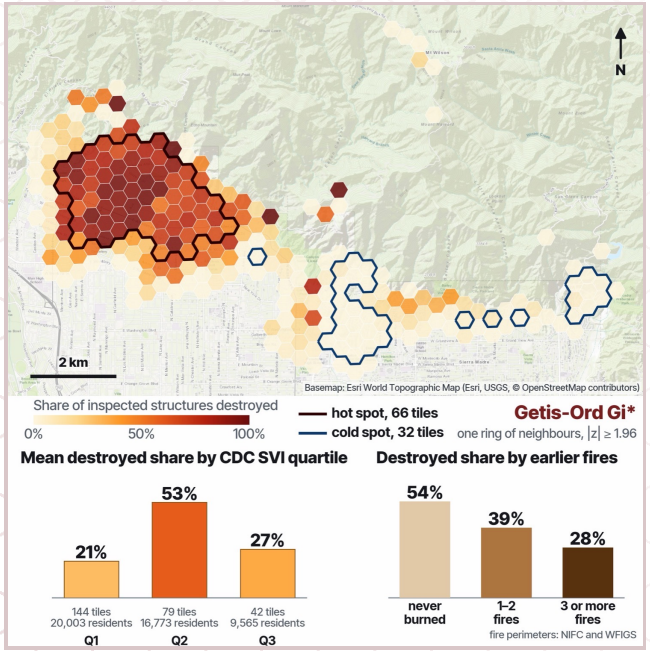
Question in plain words → **Plan** by the model → **Plan check** steps authorized → **Run tools** on the H3 grid → **Answer check** numbers match → **Answer** each number cited

EAR Lab Explore & Resolve

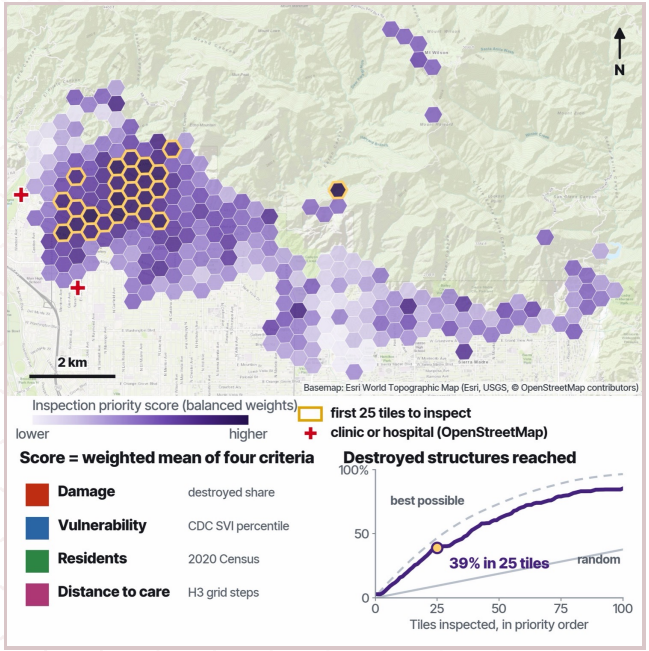
Spatial Analysis · Eaton Fire, January 2025

Hot spots show where it burned, a ranking shows where to go first

A Where did structures burn?



B Where to inspect first?



66 tiles

Getis-Ord Gi* hot spot in Altadena, cold spots on the eastern foothills

39% vs 9% at random

of destroyed structures reached in the first 25 of 265 tiles

ρ = 0.53

Sentinel-2 burn severity against inspected damage: no substitute for inspection

18,428 inspected structures on 265 H3 tiles. Every number here was computed by a spatial tool; the model wrote none of them.

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Can You Trust It?

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Each answer is checked before release, and anyone can replay it

ACCESS

0 of 2,526

results that depend on restricted damage data were released

NUMBERS

91%

of 10,440 numeric errors injected into real answers were refused

MAP READING

44 to 46%

of 114 map questions answered by vision models without the tools

1. **A shared hexagonal grid** turns damage, people and hazard data into layers anyone can overlay.
2. **Spatial tools, not the model,** produce the answer: hot spots, priorities and distances are computed, then explained.
3. **GIS that explains itself:** every number cites its analysis step, and a refused question names its rule.

Try the live map
runs in a browser

Code and paper
open source, MIT

A new event needs one configuration file. yyang295@tamu.edu

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