

OUTLIV_AING WARS

Safe internal and external navigation amid destruction

PRESENTED TO
AAAI

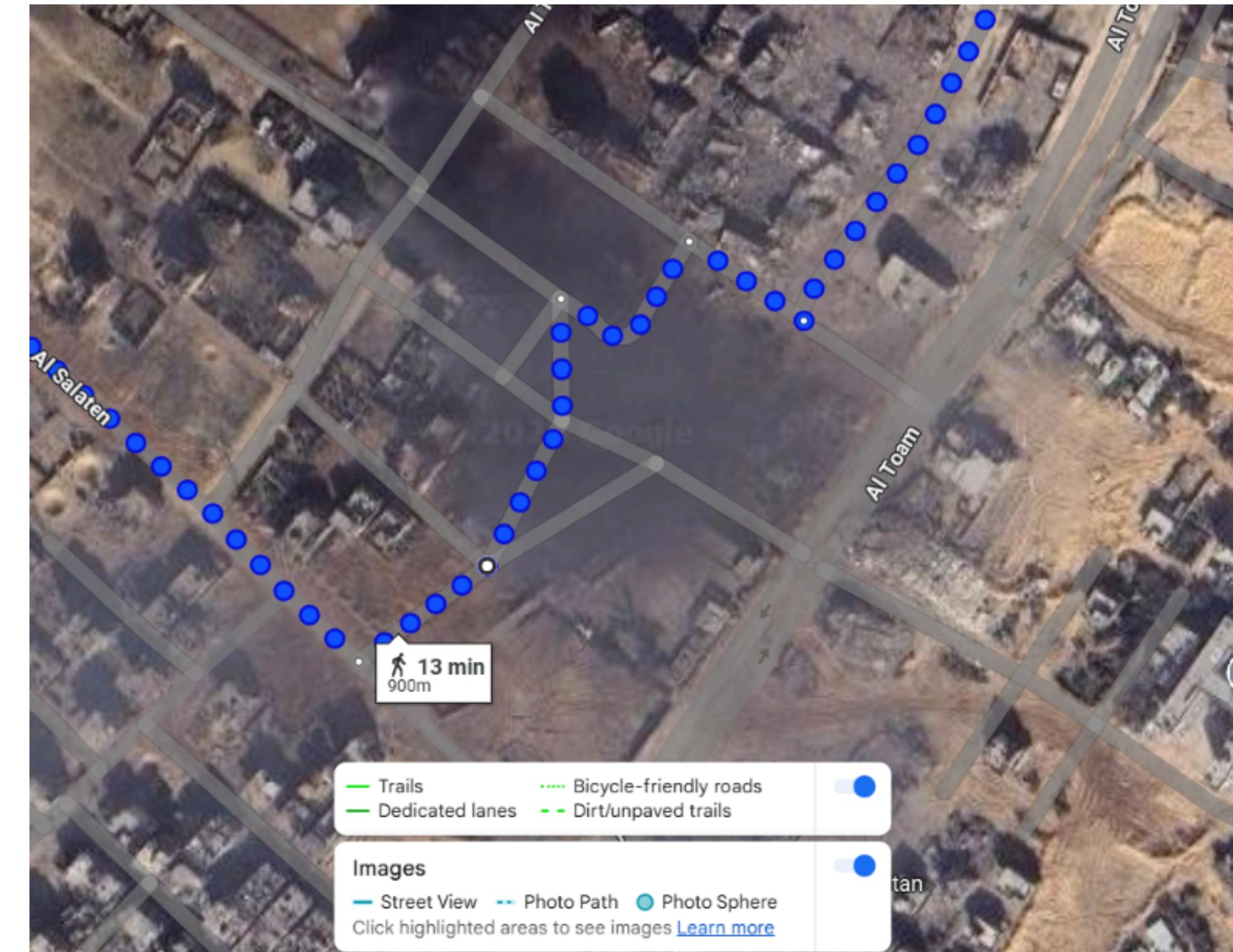
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PROBLEM

68% the roads rendered UNUSABLE due to destruction in wars
GMaps don't account for this while routing

Degraded mental healthcare facilities,
Low internet creates definitive psychological strain

Victims often feel as though they have reached a dead-end both externally—in their physical environment—and internally, as hope and pathways to safety diminish.



**Image from the Gaza region,
showing a route through a bombed area**

PROPOSED SOLUTIONS



1

Destruction Detection from Satellite (pre and post) images



2

Append destructed **node** in the **GMaps**, rerouting function

3

Quantized Influence Measure optimised RAG on **trauma-focused Cognitive Behavior Therapy** documents- on a reasoning LLM with quantization for low-net deployment

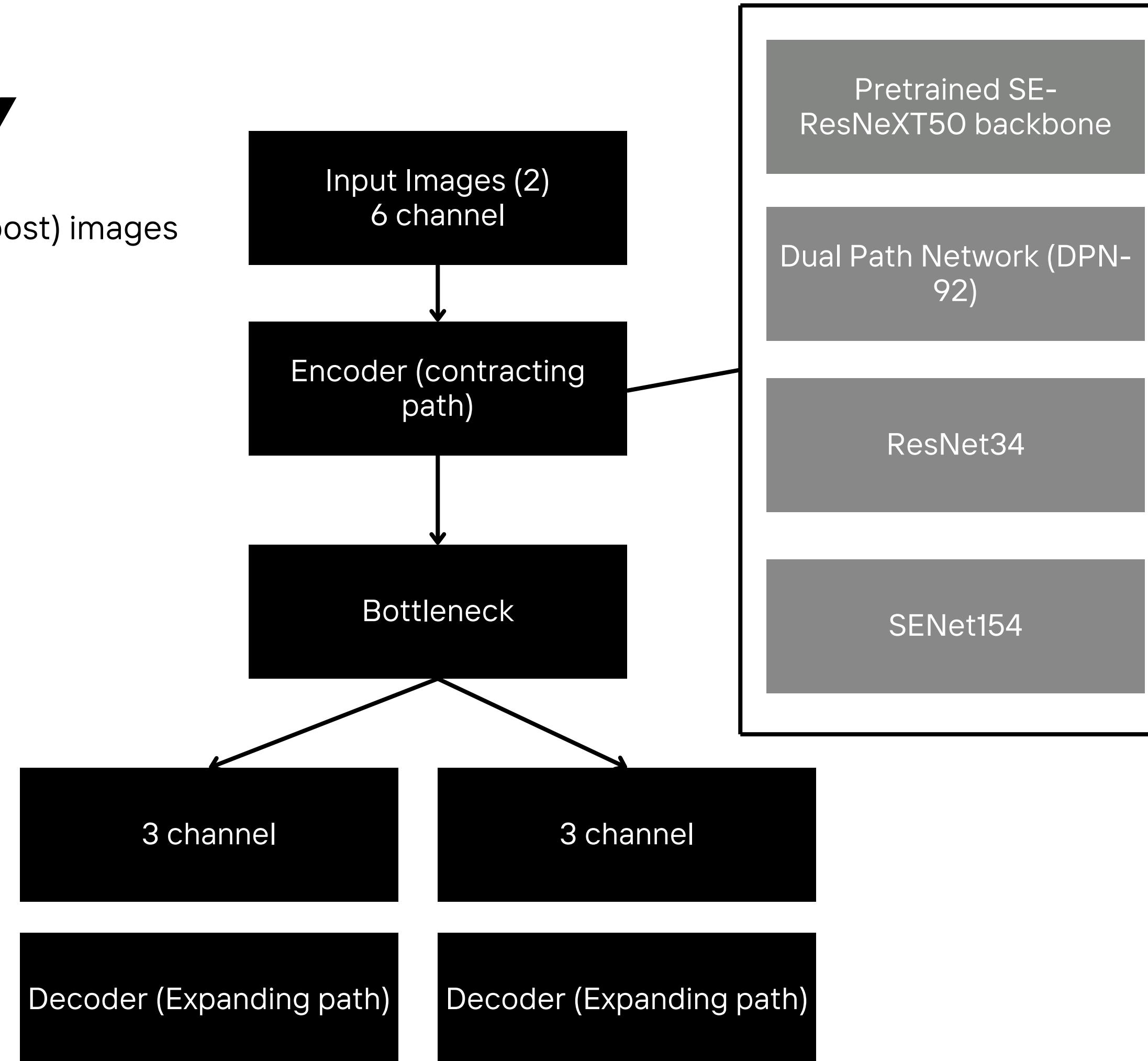
METHODOLOGY

Destruction Detection from Satellite (pre and post) images

Safe Navigation and Infrastructure Integration:

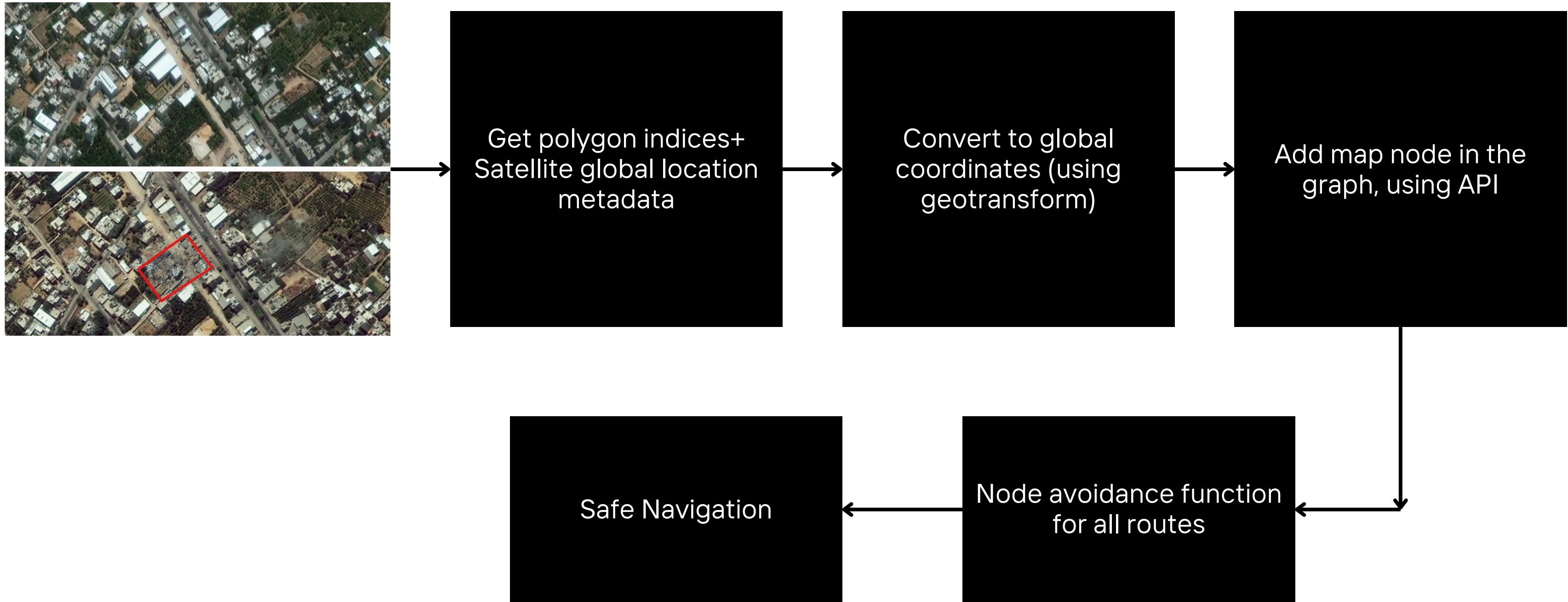
- We advocate for a system that continuously detects and maps destroyed areas.
- By integrating these “no-go” zones into platforms like Google Maps, the system prevents navigation routes from traversing hazardous, destroyed areas.
- This dynamic integration offers war-affected residents safe, up-to-date routing information, empowering them to relocate or access essential services with confidence.

Solution inspired from xView2 competition entries, xBD dataset used



METHODOLOGY

Maps integration



METHODOLOGY

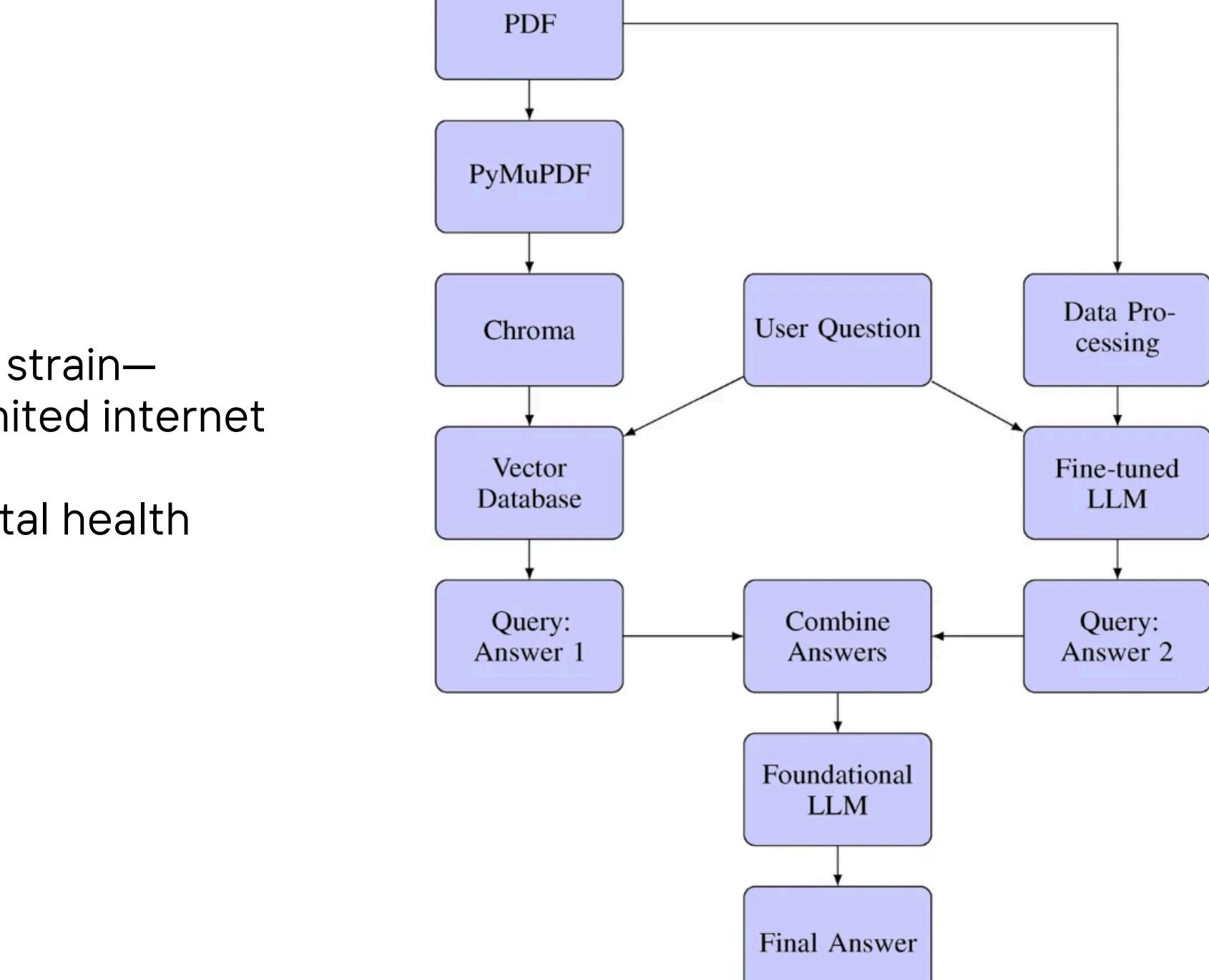
Trauma Focused Cognitive Behavioral Therapy-

- Recognizing that survivors face severe psychological strain—exacerbated by degraded healthcare facilities and limited internet connectivity (often only 2G).
- There are no fully trained and yet easy to deploy mental health solutions

AI Judge mechanism:

Replaces cosine-similarity with Quantized Influence
$$QIM = \sum[(y_{local} - y_{global})^2 \times N_i^2] / (q \times \sigma_Y)$$

Dual Retrieval Path-
Vector DB (Chroma) + Fine-tuned LLM outputs →
Fused context



- 69% reduction in hallucination rates compared to pure RAG
- 42% faster response times through 4-bit quantization
- 0.95+ similarity scores on therapeutic coherence

The system now prioritizes **clinically-relevant responses** through QIM scoring while **maintaining natural dialogue** flow via the hybrid generation approach.

CITATIONS

- <https://www.nature.com/articles/s41598-024-79110-x>
- <https://www.xview2.org/>
- <https://www.techrxiv.org/doi/full/10.36227/techrxiv.172954485.56359064>
- <https://ojs.aaai.org/index.php/AAAI/article/view/11168>

FUTURE DIRECTIONS

- CBT needs better fine-tunings, dataset of QnA, and more emotional-state empathising abilities
- Destruction detection can be made more lightweight