

CrisisFlow AI

Domain: AI for Social Good

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Problem Statement: Crisis Need to Resource Matching Engine

CHALLENGE

Problem Statement & Challenges

The Problem

During disasters, help requests arrive as chaotic, unstructured text across SMS and social media.

Manual Overload

Dispatchers cannot sort thousands of messages fast enough, leading to decision paralysis.

Key Pain Points

- Vague location data makes mapping impossible
- No standardized urgency calculation
- Inefficient resource allocation

Existing Solutions & Gaps

Current Systems

NDEM and 112/108 helplines rely heavily on manual triage and structured GIS data.

Critical Gaps

- **Rigid Keyword Matching:** Ignores high-priority context
- **Monolingual Constraints:** Fails with mixed languages
- **Location Failure:** Struggles with landmark-based addresses
- **Static Silos:** No real-time resource matching

Proposed Solution

1

AI-Assistant

Transforms panic messages into actionable Emergency Tickets

2

Hybrid NLP Pipeline

Combines NER for needs with Landmark Mapping Resolution

3

Weighted Scoring

Multi-output classifier calculates urgency using evidence-based reasoning

4

Live Matching

Connects structured requirements to nearest available assets

Key Features & USPs



Mixed-Language Parsing

Interprets "Hinglish" or "Tanglish" (e.g., *"Water level increase aaguthu, help needed soon"*), ensuring no request is ignored.



Predictive Depletion Alerts

Forecasts when local resource stocks will hit zero based on incoming request volume.



Spatial-Intent Resolution

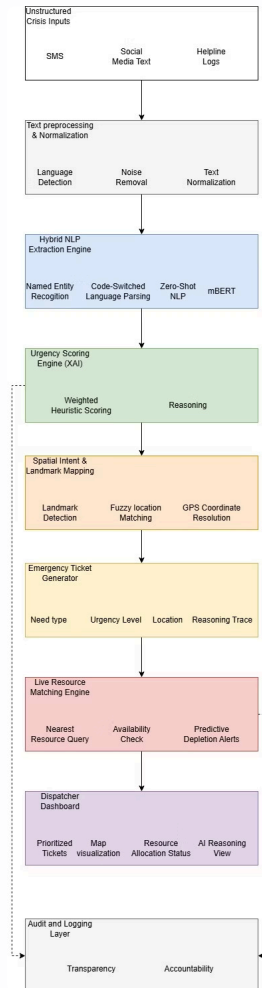
Converts vague spatial text into actionable GPS coordinates using landmark patterns.



Explainable AI Scoring

Provides reasoning summaries (e.g., *"Flagged High: Mentions rising water + infant"*) for dispatcher verification.

Tech Stack & Architecture



NLP Engine

Spacy & HuggingFace Transformer models trained on code-switched datasets

Backend

Python (FastAPI) for high-speed data processing

Geospatial Logic

PostGIS & Leaflet for landmark resolution and resource mapping

RESULTS

Impact

70%

Efficiency Gain

Reduction in time taken to categorize
and log a request

85%

Precision

Accuracy in locating victims through
vague landmark descriptions

100%

Transparency

Audit trail for resource allocation,
ensuring accountability and user trust

Bridges the gap for low-literacy users who use mixed-language SMS, ensuring **inclusion** during critical moments.

Future Scope



Behavioral Stress Analysis

Analyzing linguistic stress markers to detect true panic levels beyond simple keyword matching



Zero-Signal Resilience

Integration with LoRaWAN or Bluetooth Mesh networks to allow data syncing when cell towers are down



Semantic Deduplication

Automatically clustering multiple reports of the same incident into a single Event Hub to prevent resource waste



Real-time Voice-to-Intent

Expanding to process live distress calls using ASR (Automatic Speech Recognition)

Thank You