

SafeGuardianAI

A natural disaster response
assistant in your pocket.

Andrew Herr
Paul Cohen
Sinan Robillard
Sergio Saenz
Otto Wagner



Turkey : Feb.2023 Earthquake – 7.7 mag

- 850.000 persons were displaced
- 37,984 buildings collapsed
- 50,783 casualties & 115,353 injured
- 84 Billion \$ losses

**International Search and Rescue Advisory Group (INSARAG)
recommendations following the Earthquake:**

'We need to learn more on the survivability of people in the rubble, in order to direct search and rescue operations'

SafeGuardianAI



Helps rescue teams prioritise and optimise interventions



Avoid cluttering of call-centers with AI-assisted triage on-device



Robust dataset with offline persistence

Nexa AI Super AI Agent Speaker Panel & Demo Day Recording



1:37:12 / 2:18:30 • 7 Finalist Hackathon Teams Present Their Projects (- Team Grove; - Team Googler; - Team AR-AI Task Guide; - Team Pro-spect; - Team DocoT... >

Stanford Room





NEXA AI @nexa4ai · Aug 28

Nexa AI Super AI Agent Hackathon First Place Winner: Safe-Guardian AI

Congratulations to Sinan Robillard @Cogni_Tech, Andrew Herr @defunctduck and Brihith Shenoy @Bruheeth for winning first place with Safe-Guardian AI!



Safe-Guardian AI is a powerful natural disaster

Show more



NEXA AI @nexa4ai · Aug 26

Replying to @nexa4ai



<SafeGuardianAI> - A Natural Disaster Response Assistant in the Pocket



SUPER AI AGENT HACKATHON AWARD

1 No.1

SAFE GUARDIAN

Sinan Robillard, Andrew Herr, Brihith Sheno

2 No.2

GOOGLERS

Mohamad Alhajar, Barbara Su

3 No.3

AR-AI TASK GUIDE

Yayuan Li

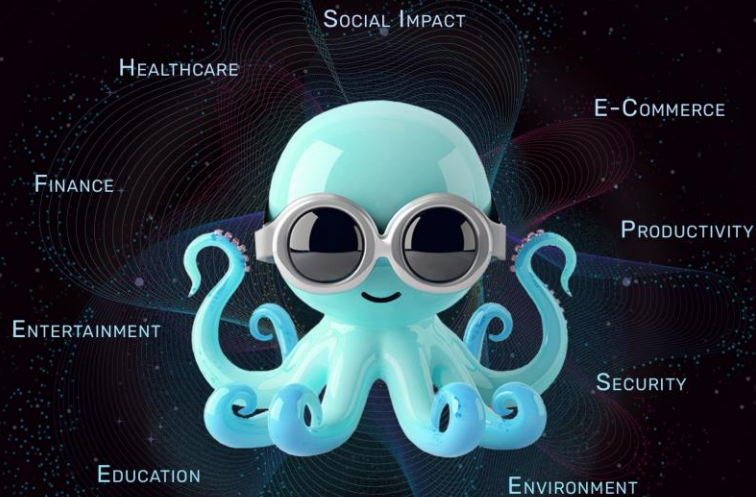


COMPLETED

N NEXA AI x 🤖 Hugging Face

SUPER AI AGENT HACKATHON

WIN UP TO **\$7,000** PRIZES BY BUILDING THE BEST
AI AGENT-POWERED APP WITH YOUR TEAM



1st Round: July 19 - August 18 | Online

2nd Round: August 25, 2024 | The Hub @ Stanford Research Park

IN PROGRESS

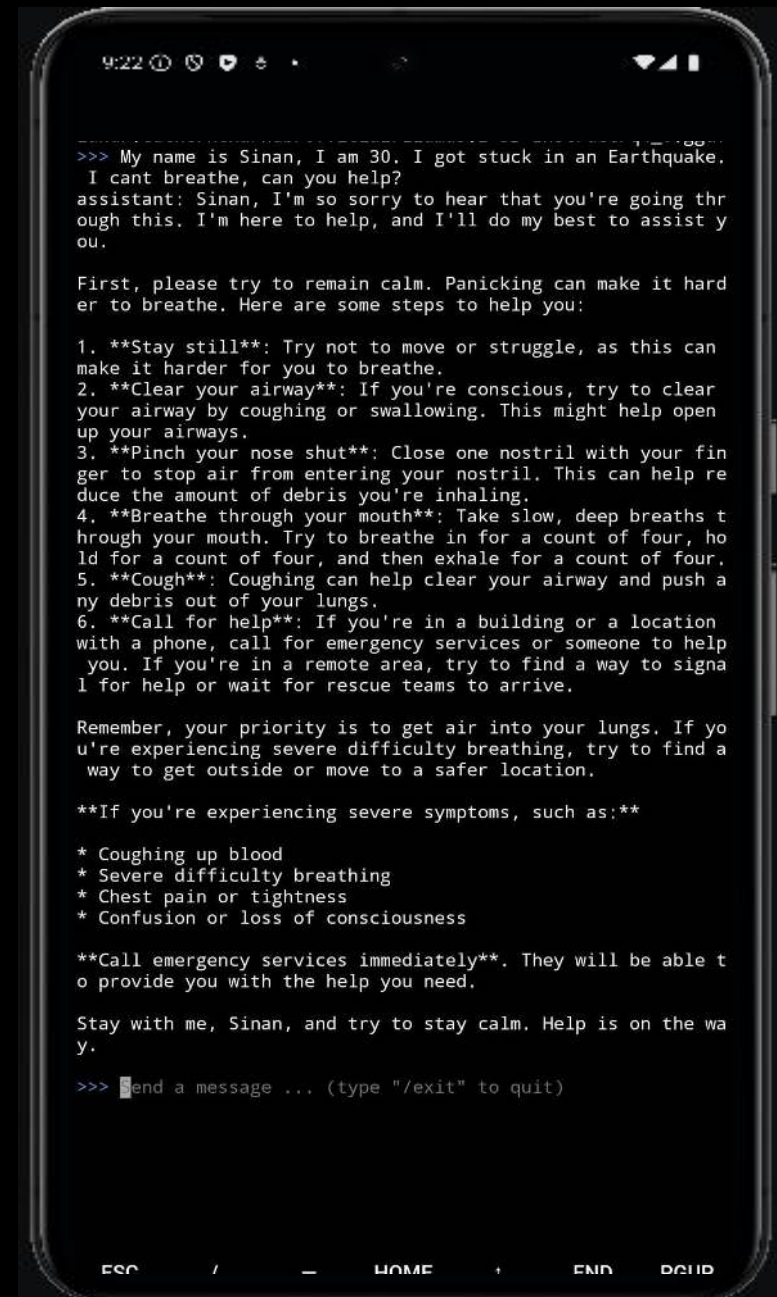


Gemini API Developer Competition

SafeGuardianAI

Features - Client

- Psychological & emotional support
- Basic survival assistance
- Estimation of vital emergency status
- Standardized data collection



Features - Server

- Offline Persistent DB
- Real-time updates
- Emergency Filters
- Optimized Routes



- `get_rescue_data(incident_number: Optional[int], time: Optional[str])` : Fetch rescue data for a specific incident number and time.
- `add_victim_info(victim_info: Dict[str, Any])` : Add victim information to the database.

I am a post-disaster bot here to help. What happened? Are you injured? Please tell me your location.

Hello

I am here to help. Please tell me what happened and what you need. I can help you connect with rescue teams and provide you with valuable information.

I have a headache and bleeding feet

```
{
  "headache": true,
  "bleeding_feet": true
}
```

I understand you are in pain. Please try to stay calm. I am collecting information to help. Can you tell me your location?

I am in St.Peterson street

```
{"location": {"street": "St.Peterson street"}}
```

OK. I understand you're on St.Peterson street. Is there anything else I can help you with? For example, do you need help finding shelter, food, or medical attention?

Yes, please, I am looking for food..

Demo

Victim Info:

```
{
  "personal_info": {
    "name": ""
    "age": ""
    "gender": ""
    "location": ""
  }
  "medical_info": {
    "injuries": []
    "medical_conditions": []
    "medications": []
  }
  "situation": {
    "disaster_type": ""
    "immediate_needs": []
    "safety_status": ""
  }
  "contact_info": {
    "phone": ""
    "emergency_contact": ""
  }
  "resources": {
    "food_water": ""
    "shelter": ""
    "communication_devices": []
  }
}
```

Challenges

Emerging Solutions

- Deployment & Integration
- Disrupted Networks
- Privacy

- On-device LLMs ([Qualcomm](#))
- Satellite ([Apple](#) / [Android](#))
- Ad-hoc / FANET / SPANs
- Encryption

Future Improvements

- On-device LLMs agents
 - HotSpot
 - BatterySaving
 - EmergencyContact
- Dynamic path-optimization
 - NumberOfRescueCenter
 - NumberOfFleets
 - CapactiyOfFleets
- Emergency Ad-Hoc Networks
 - MESH
 - FANET
 - SPOTs



Thank you, and Stay **Safe!**



Data Collection

Category	Information
Status	Emergency Status
Location	Latitude, Longitude, Details, Nearest Landmark
Personal	Name, Age, Gender, Language
Medical	Injuries, Pain Level, Conditions, Medications, Allergies, Blood Type
Situation	Disaster Type, Immediate Needs, Trapped Status, Mobility, Nearby Hazards
Contact	Phone, Email, Emergency Contact
Resources	Food, Water, Shelter Status, Communication Devices
Rescue	Last Contact, Rescue Team ETA, Special Rescue Needs
Environmental	Temperature, Humidity, Air Quality, Weather
Device	Battery Level, Network Status
Social	Group Size, Dependents, Nearby Victims, Verbal Communication
Psychological	Stress Level, Special Needs

Tech-Stack

- LLM : Gemini-Flash-1.5 / Llama 3.2
- Dataset : FireBase Realtime
- Front-End : Streamlit
- Hosting : HuggingFace Spaces
- Mapping : Kepler.gl
- Route Optimization : OSRM



References :

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