



CAPSTONE PROJECT

PRESENTATION

1504314 Selected Topic in Digital and Communication Engineering
Section 1

ABOUT OUR PROJECT

Project Title
LIFELINK



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PROBLEM STATEMENT

Natural disasters affect millions of people worldwide, but accessing historical disaster data and expert knowledge about disaster preparedness is often scattered across multiple sources. People struggle with:

- Finding historical disaster data quickly for research and analysis
- Getting accurate information about disaster patterns and trends
- Understanding disaster prevention and safety measures
- Accessing expert knowledge about weather and environmental science

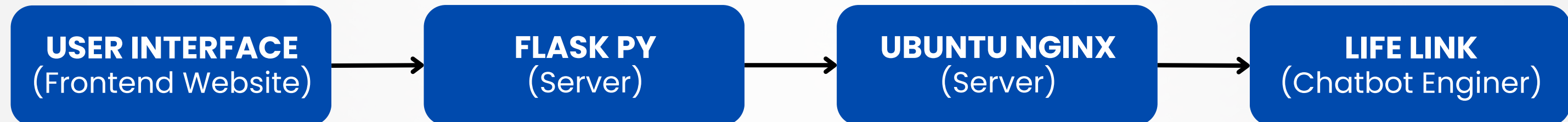
Our application consolidates “67,605 disaster records from 2000–2021” and provides intelligent answers through a dual AI system.

TARGET USERS



- Researchers & Students – Need quick access to historical disaster data for analysis and academic work
- Emergency Planners & Government Officials – Require historical patterns to prepare for future disasters
- General Public – Want to learn about disaster safety, preparation, and understand past events
- Educators – Teaching about natural disasters, climate change, and environmental science
- Journalists & Media – Researching disaster stories and historical context

SYSTEM ARCHITECTURE



CORE PROMPT

Prompt 1: GroqCloud (Dataset-Trained Responses)

```
python
```

```
context_text = """You are a Natural Disaster and Weather Information Assistant.  
You have access to a comprehensive database of natural disasters.
```

RELEVANT DATA FROM DATABASE:

1. [Disaster Record 1 – e.g., "Type: Earthquake, Location: Japan, Year: 2011, Magnitude: 9.0, Casualties: 15,894 deaths"]
2. [Disaster Record 2]
3. [Disaster Record 3]

IMPORTANT: Answer **ONLY** using the data provided above.

If the data doesn't contain the specific information requested, say 'I don't have that specific information in my database.'

CORE PROMPT

User Question: [user's question]

Why This Design?

1. ****Clear Role Definition****

- "Natural Disaster and Weather Information Assistant" establishes expertise
- Model understands its domain and limitations

2. ****Explicit Context Provision****

- Top 5 most relevant records provided for each query
- Real disaster data in structured format (Type, Location, Year, etc.)
- Model can reference specific data points

3. ****Strict Boundary Setting****

- "Answer ONLY using the data provided above" prevents hallucination
- Forces model to stay grounded in actual dataset
- Critical for factual accuracy with historical data

4. ****Uncertainty Handling****

- Instructed to explicitly say "I don't have" when data is missing
- Triggers automatic fallback to Gemini
- Prevents making up information

5. ****Few-Shot Learning Implicit****

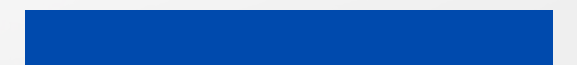
- By providing 3-5 examples per query, model learns the format
- Understands how to extract and present disaster information

CORE PROMPT

Prompt 2: Gemini (General Knowledge Fallback)

```
```python
prompt = """You are a weather and natural disaster expert.
Answer this question with complete, detailed information.
```

```
DO NOT say "I can help" or ask for clarification.
Just answer the question directly."""
```



# CORE PROMPT

Question: {user\_message}

Provide a complete answer:"""

``` Why This Design?

1. ****Assertive Instructions****

- "DO NOT ask for clarification" prevents unhelpful meta-responses
- We learned through iteration that polite prompts led to generic "I can help" responses
- Commanding tone forces substantive answers

2. ****Expert Persona****

- "weather and natural disaster expert" establishes credibility
- Ensures responses are domain-appropriate

3. ****Direct Answer Requirement****

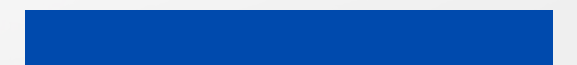
- "Just answer the question directly" eliminates clarification loops
- Users get immediate value, not a conversation about having a conversation

4. ****No Few-Shot Examples****

- Gemini is used for open-ended queries outside dataset scope
- Examples would constrain its general knowledge capabilities

5. ****Simplicity****

- Shorter prompt = faster processing
- Gemini's base training is strong enough for general knowledge""



KEY CHALLENGES

Our Key Challenge: Relying only on a fixed training dataset creates critical knowledge gaps.

Problem: Disasters are unpredictable. A static dataset can't possibly cover every unique, real-time question a user might have.

Risk: If a user's question is "outside the dataset," a standard chatbot fails. In a disaster, a failed response is unacceptable.

Solution: We integrated Gemini to intelligently handle all "out-of-dataset" queries, instantly scaling our assistant's knowledge from a limited dataset to a comprehensive, real-time informa

ETHICAL IMPACT STATEMENT

Temporal Data Bias

Risk Identified:**

Our dataset only contains disasters from 2000–2021. Users might:

- Assume they're getting current disaster information
- Miss awareness of recent disasters (2022–2025)
- Make decisions based on outdated patterns

Example Harm Scenario:

A user asks "What floods happened in Pakistan?"

→ Gets 2010 data

→ Doesn't know about devastating 2022 Pakistan floods


ETHICAL IMPACT STATEMENT

Our Mitigation

1. Timestamp visibility – Disaster records include year
2. Gemini fallback – Can provide recent disaster information
3. Explicit uncertainty – System says "I don't have" when data missing
4. Source labeling – Users can see if info is from historical dataset

VS CODE EXTENSION FOR DEVELOPERS







LifeLink's Buddy - Weather Companion

Swan Htet | 5 | ★★★★★(1)

Your friendly AI-powered weather companion! Get personalized weather recommendations from Google Gemini AI, 3 times daily with smart re...

[Disable](#) [Uninstall](#) ☒ Auto Update 

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LifeLink's Buddy - Your Weather Companion

[WEATHER](#) [COMPANION](#) [VS CODE](#) [EXTENSION](#) [AUTO](#) [UPDATES](#)

Never forget your umbrella again! Get smart weather updates 3 times daily.

Your friendly weather companion with beautiful weather-based animations.

Developed by Swan Htet  Website: <https://sh.skillfusion.tech>

✦ Features

Smart Weather Updates

- **Auto notifications 3 times daily** (8 AM, 2 PM, 8 PM)
- **AI-powered recommendations** - Powered by Google Gemini AI for unique, personalized weather advice
- **Smart daily limits** - 3 AI recommendations per day with intelligent fallback system
- **Context-aware suggestions** - Weather advice tailored for developers and productivity
- **Beautiful weather display** with professional Tabler Icons
- **Live updates** directly in your VS Code sidebar

Auto-Location Detection

Installation

| | |
|--------------|--------------------------------|
| Identifier | skillfusion.lifelink-codebuddy |
| Version | 2.0.4 |
| Last Updated | 1 day ago |
| Size | 4.50MB |

Marketplace

| | |
|---------------|------------|
| Published | 1 week ago |
| Last Released | 1 week ago |

Categories

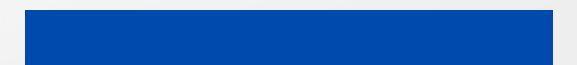
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Resources

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LIVE DEMO

174.138.27.13:5000



A top-down view of a desk with various items: a laptop, a cup of coffee, a pen, a notebook, glasses, and a plant. The text "THANK YOU" is centered in the middle of the image.

THANK YOU