

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

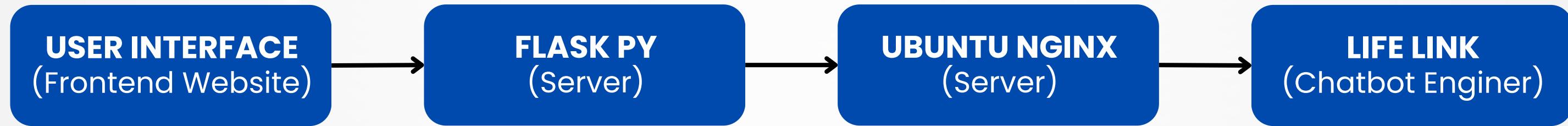
Our application consolidates “67,605 disaster records from 2000–2021” and provides intelligent answers through a dual AI system.

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?"

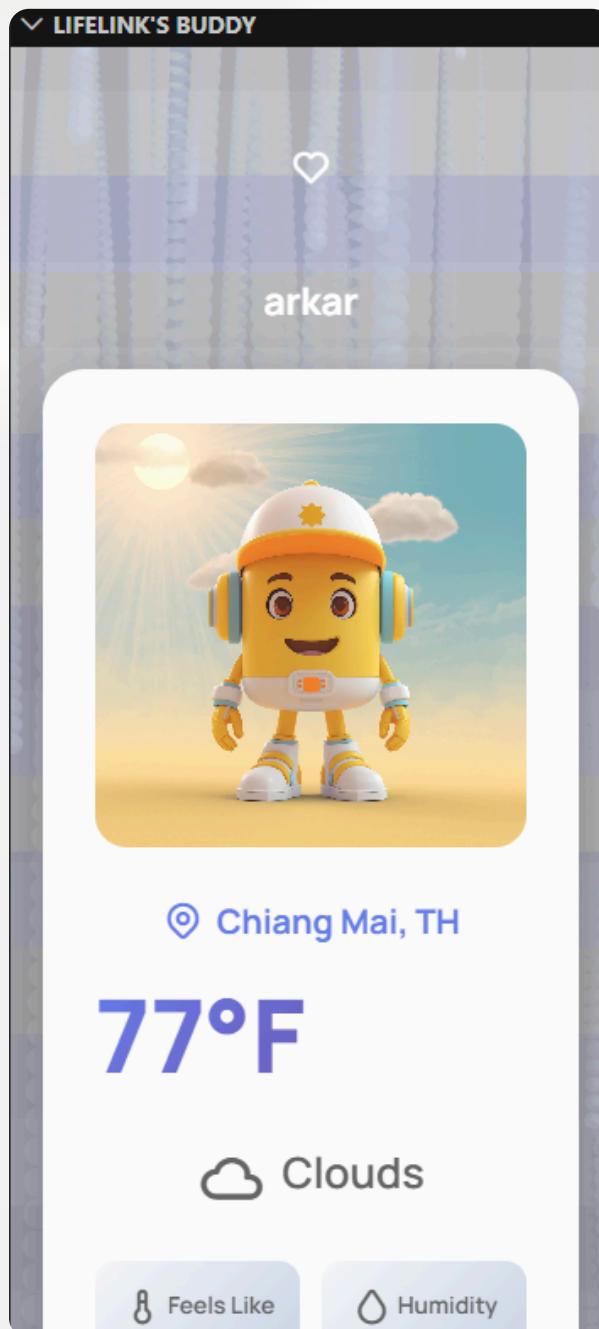
- Gets 2010 data
- Doesn't know about devastating 2022 Pakistan floods

# 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

[DETAILS](#) [FEATURES](#)

### 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**

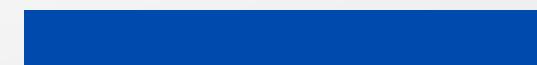
Other Education Snippets

**Resources**

[Repository](#) [Issues](#) [License](#) [Swan Htet](#)

# LIVE DEMO

174.138.27.13:5000



A soft-focus background image featuring various office items: a keyboard in the top right, a white mug, a notepad with a pen, a pencil, a small plant, and a large green leaf in the bottom left. The overall aesthetic is clean and professional.

# THANK YOU