

## **Alaska Department of Snow**

AI-Powered Weather & Snow Assistant

### **Overview**

The Alaska Department of Snow is a cloud-based AI assistant that answers snow and weather-related questions using Retrieval Augmented Generation (RAG) and real-time weather data from the National Weather Service API.

The system is built with a FastAPI backend, containerized using Docker, and deployed on Google Cloud Run.

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### **Architecture**

User (Browser)

Frontend (HTML, CSS, JavaScript)

FastAPI Backend (Cloud Run)

RAG Knowledge Base (Google Cloud Storage FAQ Files)

National Weather Service API

Logging & Evaluation

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### **Components**

#### **Frontend**

- Chat-based UI
- Sends user queries to backend
- Displays AI responses

#### **Backend**

- FastAPI application
- Performs RAG search
- Calls real-time Weather API
- Logs interactions
- Dockerized and deployed to Cloud Run

## **RAG**

- Loads FAQ documents from Cloud Storage
  - Retrieves relevant content to improve response accuracy
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## **Deployment**

Backend deployed using:

```
gcloud run deploy ads-api --source backend --region us-central1 --allow-unauthenticated
```

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## **Features**

- AI-powered snow and weather assistant
- Real-time forecast integration
- Cloud-native architecture
- Logging and evaluation support
- Full-stack implementation