AI Engineer Test

Candidate: Ngoc-Tram Nguyen

Source code: https://github.com/ntrami/HERMES-LOGISTICS-AI-CHATBOT.git

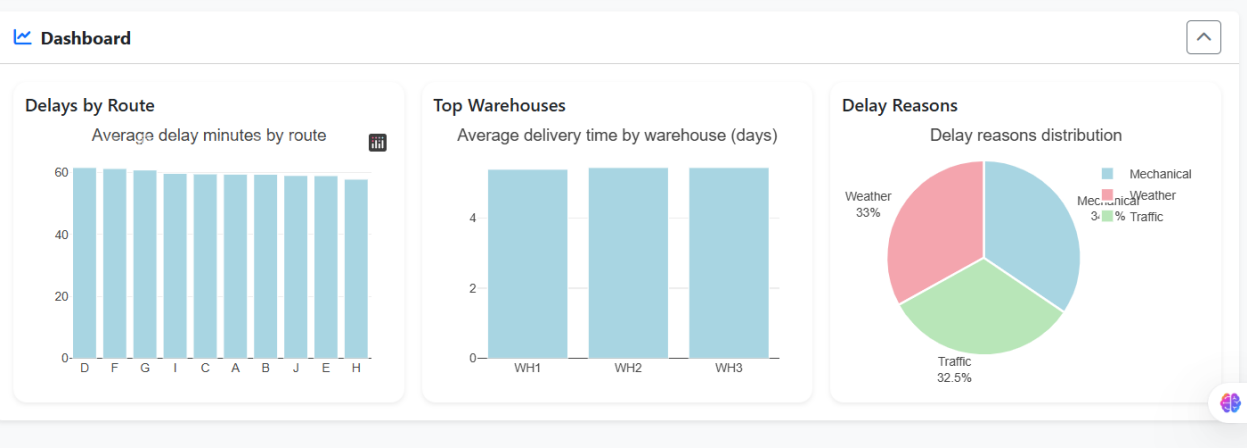
Video demo: https://www.youtube.com/watch?v=dNkY6ezW46o

1. **Context:**

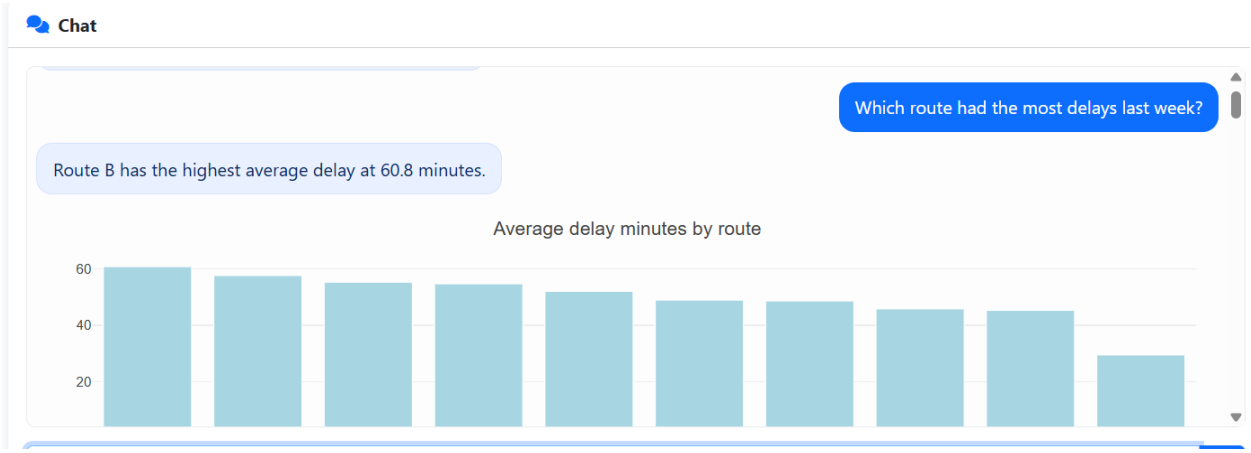
Hermes is a lightweight AI Logistics Assistant designed to support operations managers in analyzing shipment data and responding to natural language queries. Built as a full-stack application, it features a FastAPI backend for efficient data processing and a user-friendly frontend powered by Bootstrap for styling and Plotly for interactive visualizations. The system incorporates multiple NLP strategies—including rule-based keyword matching, similarity-based techniques (using TF-IDF and cosine similarity), and a logistic regression classifier—to handle query understanding effectively. It utilizes mock shipment data with 5,000 entries to simulate real-world logistics scenarios, ensuring robust testing and demonstration.

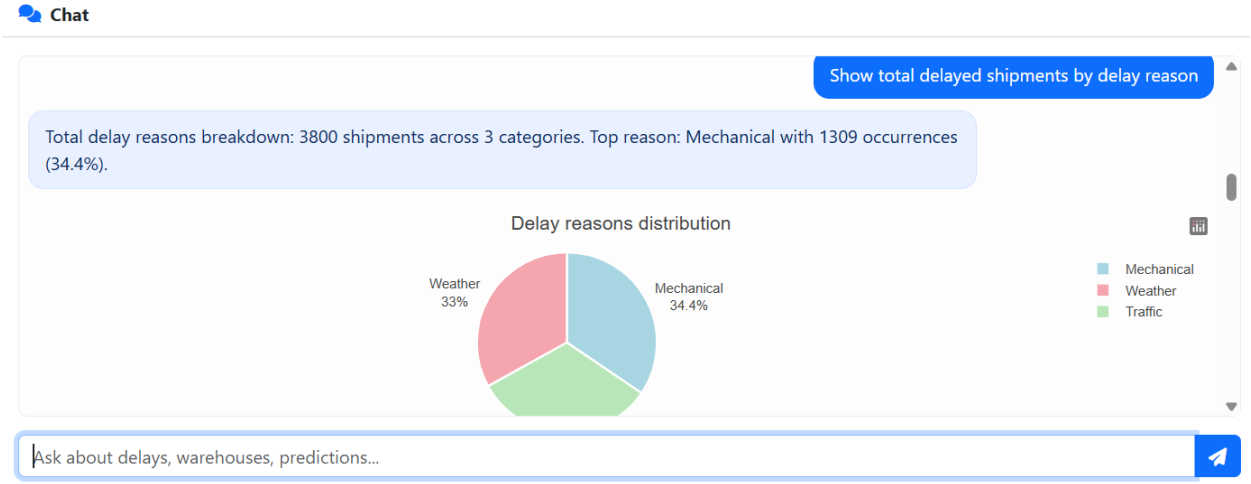
2. **Features:**

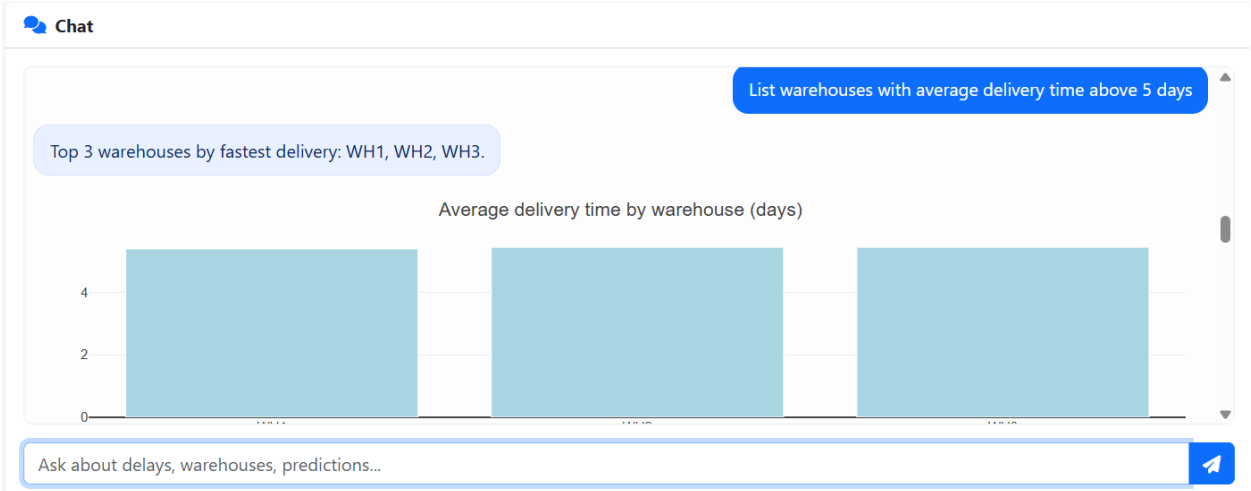
Interactive Dashboard for Visualizations:

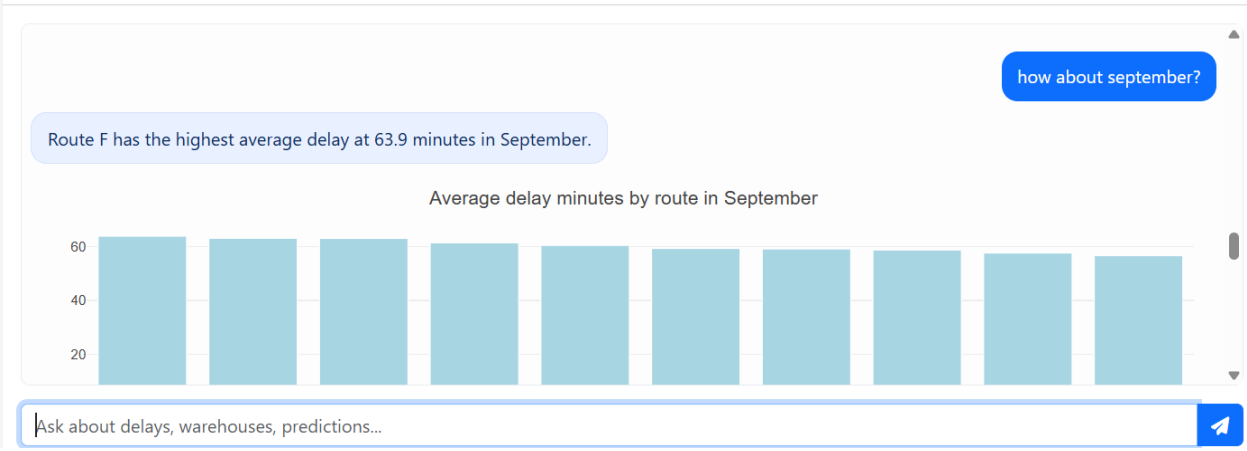


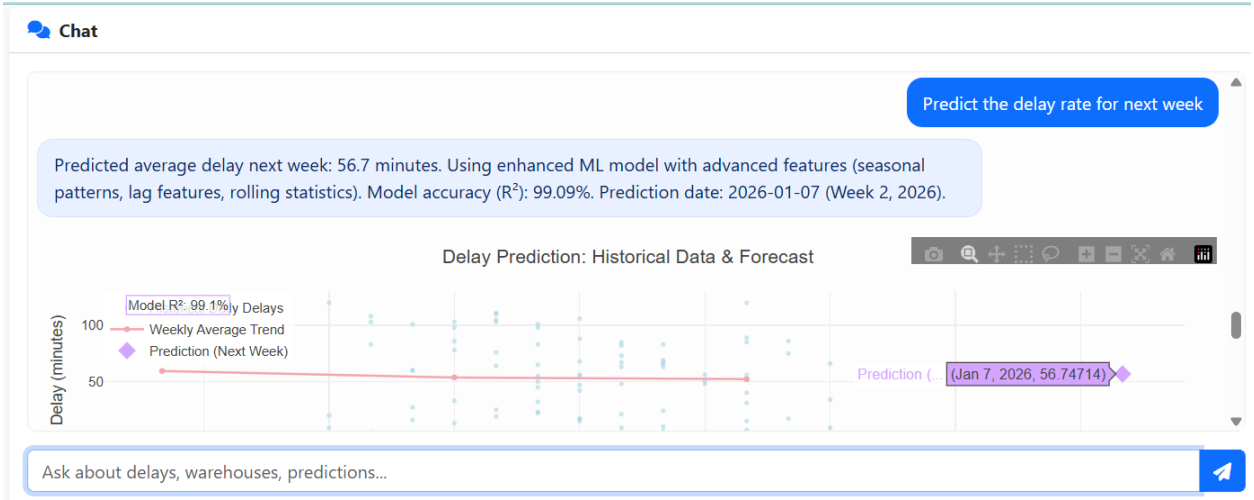
Chatbot for Logistics Queries











3. Results:

Evaluating 3 methods on 50 queries...

- Method 1 (Rule-based): F1 1.0, Avg Time 0.0276s
- Method 2 (Similarity): F1 1.0, Avg Time 0.0262s
- Method 3 (ML Classifier): F1 0.822, Avg Time 0.018s

```
PS O:\Hermes> docker-compose exec backend python eval.py
time="2025-12-10T22:36:30+07:00" level=warning msg="O:\\Hermes\\docker-compose.
yml: `version` is obsolete"
Evaluating 3 methods on 50 queries...
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Method 2 (Similarity): F1 1.0, Avg Time 0.0262s
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```