SPAM MESSAGE DETECTOR APP

AN APPLICATION TO IDENTIFY SPAM MESSAGES
USING PRE-TRAINED ML MODELS

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CONCEPT AND OBJECTIVE

PROBLEM STATEMENT:

- SPAM MESSAGES CLUTTER INBOXES, POSING RISKS LIKE PHISHING AND FRAUD.

OBJECTIVE:

- BUILD A LIGHTWEIGHT APP THAT ACCURATELY DETECTS SPAM MESSAGES USING A PRE-TRAINED ML MODEL.
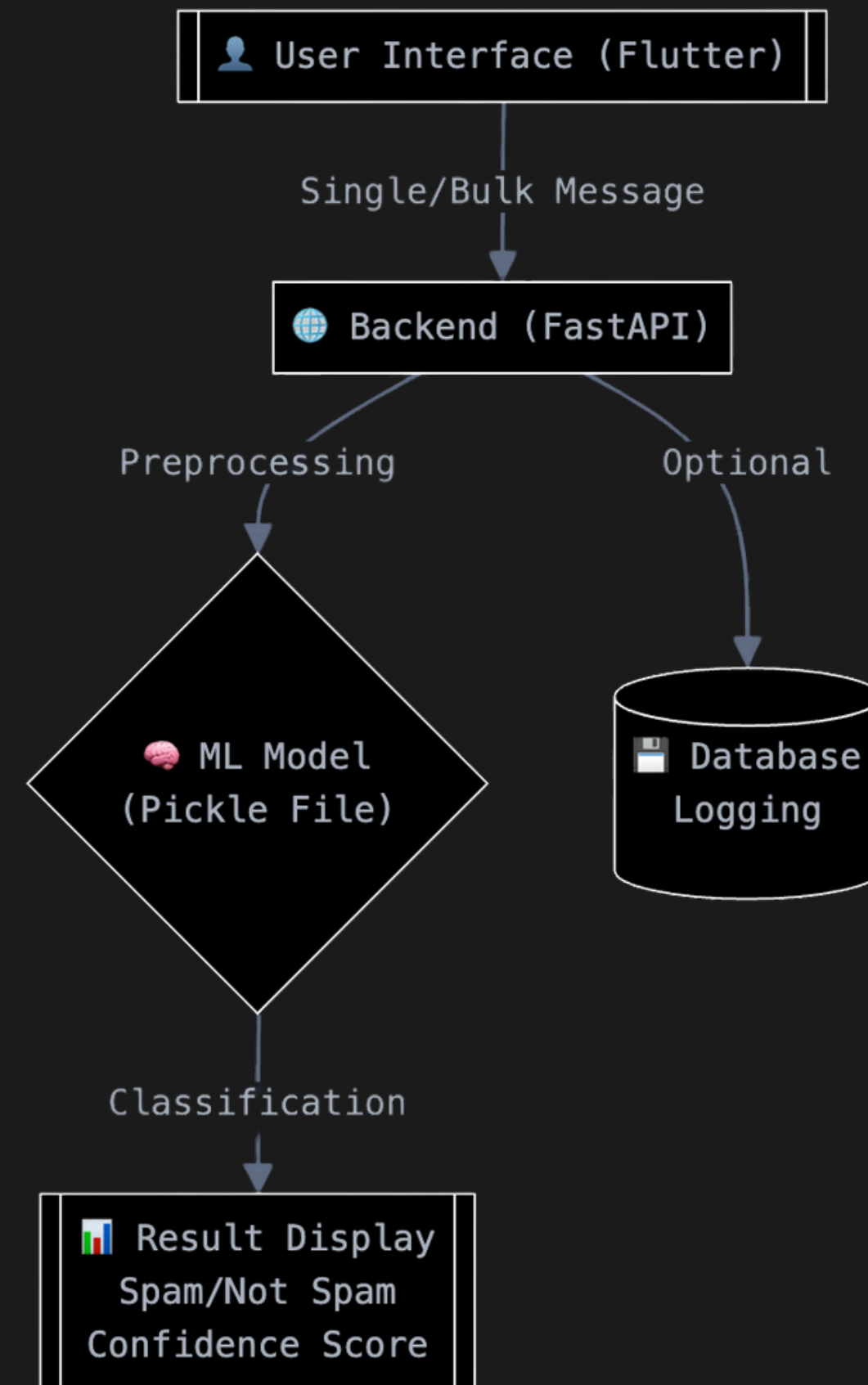
FEATURES:

- Detect if a single message is spam.

- Bulk processing for multiple messages from a text file.

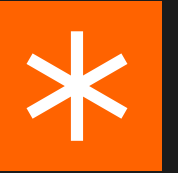- Spam probability score for each input.

✳ HIGH-LEVEL DESIGN

Tools and Frameworks

- Frontend: Flutter (cross-platform for mobile and web UI).

- Backend: FastAPI (lightweight, fast web framework for APIs).

- Model: Pre-trained spam classification model, saved as .pkl.

👤 User Interface (Flutter)

Single/Bulk Message

🌐 Backend (FastAPI)

Preprocessing   Optional

🧠 ML Model
(Pickle File)

💾 Database
Logging

Classification

📊 Result Display
Spam/Not Spam
Confidence Score

EXECUTION PLAN

WEEK 1: DATA AND MODEL DEVELOPMENT

- Download SMS Spam Collection dataset and explore class distribution.
- Preprocess text (remove stopwords, tokenize, vectorize). Train a simple ML model (Naive Bayes or Logistic Regression).
- Fine-tune the model, evaluate performance, and save it as a .pkl file.

WEEK 2: API AND BACKEND DEVELOPMENT

- Set up FastAPI backend with endpoints for single text input and bulk file upload.
- Integrate the .pkl model into the API and implement preprocessing pipelines.
- Test endpoints and debug for edge cases.

WEEK 3: TESTING, DEPLOYMENT, AND PRESENTATION

- Test end-to-end functionality with varied input types (text, files).
- Deploy the API on a cloud or local server and test API response times.
- Prepare the final presentation and demo, rehearse for viva.

EXPECTED RESULTS AND APPLICATIONS

EXPECTED RESULTS:

- High-accuracy spam detection for text and batch file inputs.

- User-friendly and deployable API.

APPLICATIONS:

- Personal inbox filtering.

- Bulk email analysis for businesses.

- Enhances cybersecurity against spam threats.

THANK YOU FOR YOUR ATTENTION