News Headline Detector

Capstone Project Presentation

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Problem Statement & Objectives

Fake news spreads rapidly and misleads readers.

Objectives:

• Build a system to classify news as Real or Fake.

• Provide a confidence score for each prediction.

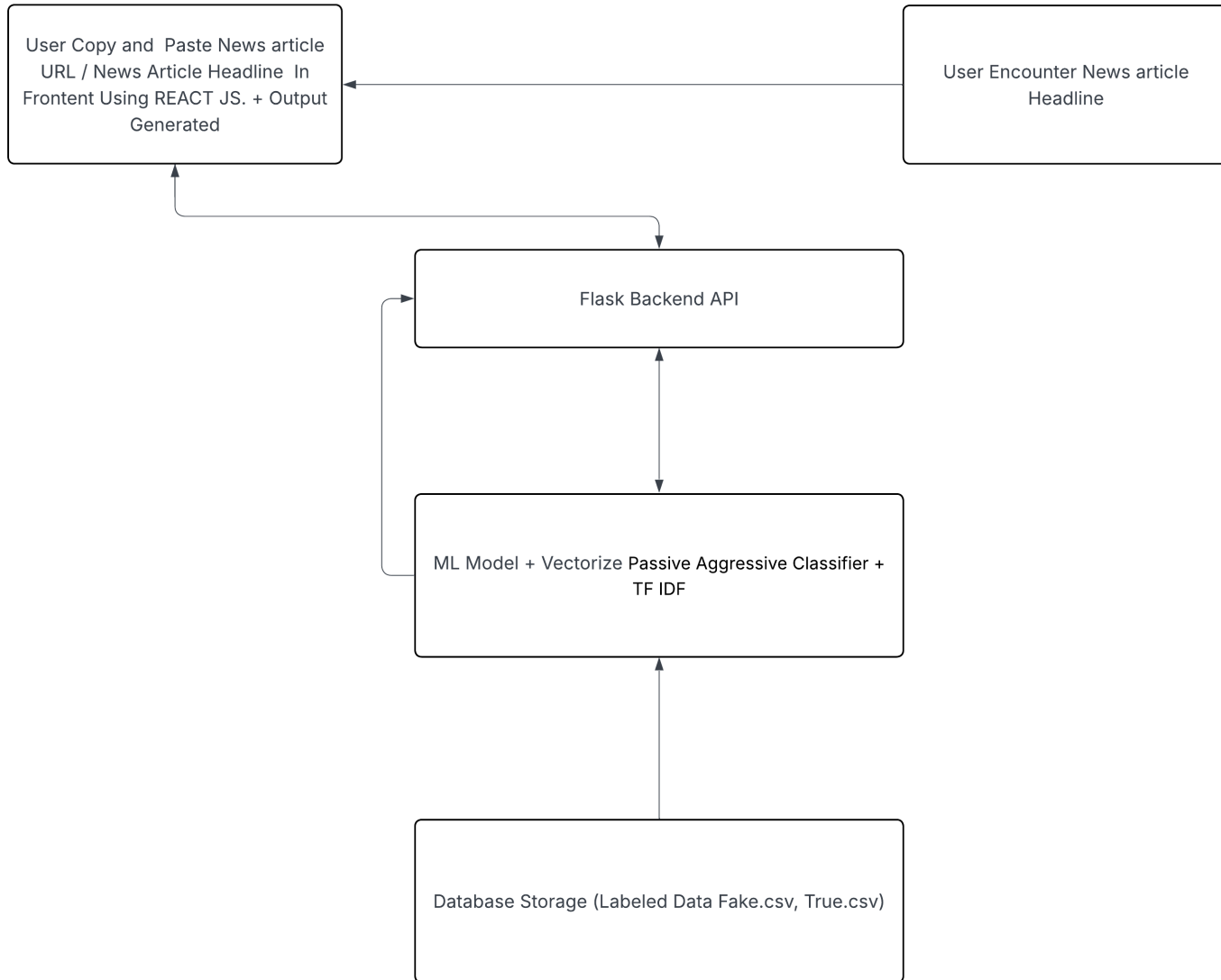• Deploy as a web application accessible to users.

Project Overview

Dataset: 50k Fake & True news samples.

Train-Test Split: 80/20.

Model: PassiveAggressiveClassifier with TF-IDF.

- System Flow:
- 1. User inputs URL or Headline.
- 2. Backend extracts & preprocesses text.
- 3. Model predicts Fake/Real + confidence.
- 4. Frontend displays results.

Archicture Diagram

User Copy and Paste News article URL / News Article Headline In Frontent Using REACT JS. + Output Generated

User Encounter News article Headline

Flask Backend API

ML Model + Vectorize Passive Aggressive Classifier + TF IDF

Database Storage (Labeled Data Fake.csv, True.csv)

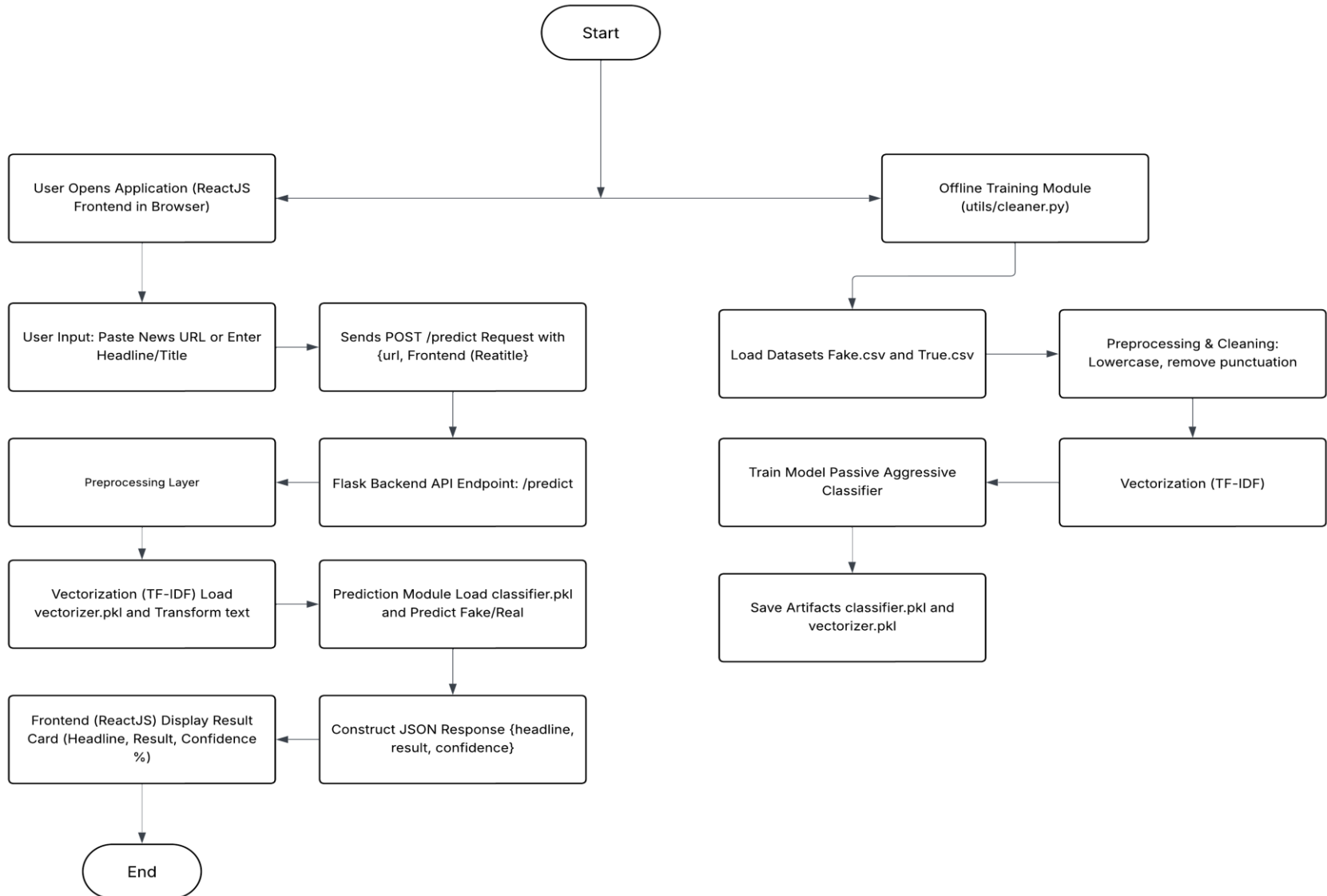# Technical Highlights

Backend: Flask REST API (app.py).

Preprocessing & Training: utils/cleaner.py.

Frontend: ReactJS (NewsForm.js, Result.js).

Deployment:

- Backend: Render
- Frontend: Vercel
- Model stored using joblib

Flow Chart

Start

User Opens Application (ReactJS Frontend in Browser)

Offline Training Module (utils/cleaner.py)

User Input: Paste News URL or Enter Headline/Title

Sends POST /predict Request with {url, Frontend (Reatitle}

Load Datasets Fake.csv and True.csv

Preprocessing & Cleaning: Lowercase, remove punctuation

Preprocessing Layer

Flask Backend API Endpoint: /predict

Train Model Passive Aggressive Classifier

Vectorization (TF-IDF)

Vectorization (TF-IDF) Load vectorizer.pkl and Transform text

Prediction Module Load classifier.pkl and Predict Fake/Real

Save Artifacts classifier.pkl and vectorizer.pkl

Frontend (ReactJS) Display Result Card (Headline, Result, Confidence %)

Construct JSON Response {headline, result, confidence}

End

Outcomes

- Confidence score displayed with results.

- Lightweight model, API-free solution.

- Impact: Helps users validate news authenticity.

Conclusion & Future Scope

Built an accurate and lightweight Fake News Detection system.

Future Enhancements:

• Expand dataset coverage.

• Add multilingual support.

• Improve model explainability.

Thank You!

Questions & Answers