Spot The Scam

Fraudulent Job Posting Detector

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Introduction

The Problem:
- Technology has increased accessibility to information about employment opportunities
- However, with this, there has also been an increase in fraudulent job postings
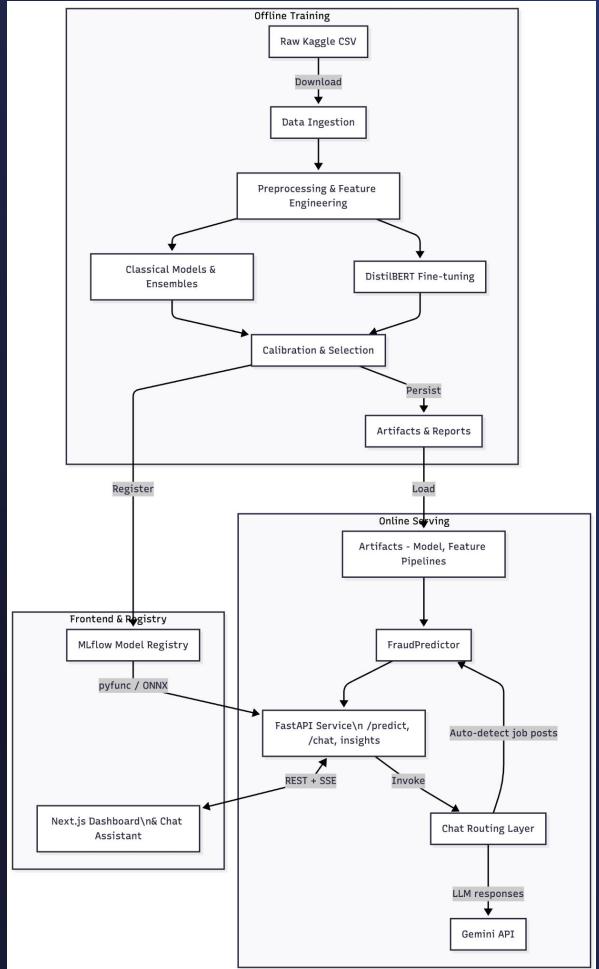 - Collecting personal information, trying to take job seekers' money through upfront fees

Our project:
- Aim: Improve the accuracy of the identification of fraudulent job postings
- Our solution: full-stack application that applies both classical and transformer models to this modern problem

Methods

- Kaggle job-post datasets merged. Text fields combined into a single text_all feature

- Classical models: Logistic Regression, Linear SVM, LightGBM, XGBoost

- Transformer model: fine-tuned DistilBERT on text_all

- All candidates tuned and ranked by validation F1; best calibrated model evaluated on test

- Gemini API chatbot wraps the model using conversation history, job fields, and model outputs

Results

Table 1: Performance of `ensemble_top3` on validation and test splits.

Split	F1	Precision	Recall	ROC AUC	PR AUC	Brier
Validation	0.8561	0.9297	0.7933	0.9890	0.9053	0.0103
Test	0.7721	0.8537	0.7047	0.9863	0.8659	0.0143

- Validation winner: calibrated classical ensemble ensemble_top3, selected over transformer baselines by validation F1

- Generalizes well: strong F1 on validation and test with high ROC/PR AUC and low Brier (see table)

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Thanks!