Project Planning

Online Payments Fraud Detection using Machine Learning

IBM SkillsBuild | AI/ML Final Year Project

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1. Project Overview

Field	Details
Project Title	Online Payments Fraud Detection using ML
Project Type	AI / Machine Learning — Final Year Project
Platform	IBM SkillsBuild
Technology Stack	Python, Pandas, scikit-learn, Flask, HTML/CSS
Team Size	Individual / Small Team
Duration	8 Weeks
Deliverables	Trained ML model + Flask web application + Documentation

2. Project Schedule — Sprint Plan

Sprint	Duration	Tasks	Status
1	Week 1–2	Problem definition, dataset collection, EDA	Complete
2	Week 3	Data preprocessing, feature engineering	Complete
3	Week 4	Model training (Random Forest), evaluation	Complete
4	Week 5	Flask app development, UI design	Complete
5	Week 6	Integration, testing, threshold tuning	Complete
6	Week 7–8	Documentation, deployment prep, presentation	Complete

3. Work Breakdown Structure (WBS)

Phase 1: Data & EDA

- Download PaySim dataset from Kaggle
- Perform exploratory data analysis (EDA)

- Visualize class distribution and feature correlations
- Handle missing values and outliers

Phase 2: Model Development

- Encode categorical features (transaction type)
- Split data: 80% train / 20% test
- Train Random Forest classifier
- Tune decision threshold (lowered to 0.20 for high recall)
- Evaluate: accuracy, precision, recall, F1, confusion matrix

Phase 3: Web Application

- Design Flask route structure: /, /predict, /submit
- Build HTML templates for home, prediction form, result pages
- Integrate pickled model into Flask backend
- Test form inputs and edge cases

Phase 4: Documentation & Submission

- Prepare all IBM SkillsBuild required documentation
- Record project demonstration video
- Push code to GitHub repository
- Final review and submission

4. Risk Register

Risk	Likelihood	Impact	Mitigation
Severe class imbalance in dataset	High	High	Lower decision threshold; evaluate on F1
Overfitting to training data	Medium	High	Cross-validation, test set evaluation
Flask deployment errors	Low	Medium	Local testing before submission
Model file too large for Git	Low	Low	Use Git LFS or store separately