**Project Design Phase**

**Problem – Solution Fit Template**

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| Date | 30 Jan 2026 |
| Team ID | LTVIP2026TMIDS88779 |
| Project Name | Online-Payments-Fraud-Detection-using-Machine-Learning |
| Maximum Marks | 2 Marks |

**Problem – Solution Fit Template:** **Wind Turbine Energy:**

* Online payment platforms are facing increasing fraudulent transactions, leading to financial losses, customer distrust, and compliance risks. Traditional rule-based fraud detection systems are unable to detect evolving fraud patterns effectively.
* Develop a Machine Learning-based fraud detection system that analyzes transaction patterns and predicts fraudulent transactions in real-time using classification algorithms such as Random Forest and XGBoost.
* As online payment fraud increases, financial institutions need an intelligent, real-time fraud detection system that adapts to evolving fraud patterns — which our machine learning-based solution provides.
* **Grid Operators** find it difficult to balance renewable energy with traditional sources, leading to instability in the grid.

**Solution:**

The system will automate fraud detection using historical transaction data and deploy the trained model through a web-based application**.**

**🔹 Step 1: Data Collection**

* **Use historical online payment transaction data**
* **Includes features like transaction type, amount, old & new balances, etc.**

**🔹 Step 2: Data Preprocessing**

* **Remove irrelevant columns**
* **Handle missing values**
* **Encode categorical variables**
* **Split data into training & testing sets**

**🔹 Step 3: Model Training**

* **Train classification models such as:**
  + **Random Forest**
  + **Decision Tree**
  + **XGBoost (Best performing model)**

**🔹 Step 4: Model Evaluation**

* **Evaluate using Accuracy, Precision, Recall, F1-Score**
* **Select best-performing model**

**🔹 Step 5: Deployment**

* **Save trained model as .pkl file**
* **Integrate with Flask web application**
* **Enable real-time fraud prediction**

Calendar

Description automatically generated

References:

1. <https://www.ideahackers.network/problem-solution-fit-canvas/>
2. <https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe>