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AI-generated content may be incorrect.**

**Assignment**

**#1 - Fraudulent Transaction Detection (Anomaly Detection)**

* **Objective:** Detect unusual or fraudulent transactions in a synthetic payment’s dataset.
* **Synthetic Data Features:**
  + Transaction ID, timestamp, amount
  + Merchant category, payment method (credit/debit/UPI/wallet)
  + Device & geolocation (IP, country, new device flag)
  + Historical customer profile (avg. transaction size, frequency)
  + Target: Fraudulent = 1/0 (heavily imbalanced, <2% fraud cases)
* **Challenge:** Handle highly **imbalanced dataset** using oversampling (SMOTE) or anomaly detection (Isolation Forest).
* **Goal:** Achieve precision >70% to reduce false alerts for investigators.