Settings

LR threshold (saved default)

1.00

PCA threshold (saved default)

0.99

Fusion mode

or

Weighted fusion: weight for LR (w)

0.60

Weighted fusion: fused threshold

0.50

Artifacts: `fraud_lr_balanced.joblib` , `fraud_pca_anomaly.joblib`

Dataset: Kaggle – Credit Card Fraud (<small>ULB</small>)

Credit Card Fraud Detector

Logistic Regression (balanced) + PCA anomaly • Kaggle CreditCardFraud dataset

Single Transaction | Batch CSV

Single Transaction (JSON)

Load a random realistic example

Paste a JSON object with the same schema as the training features.

```
  "V22": 2.700,
  "V23": -0.300,
  "V24": 1.400,
  "V25": 0.500,
  "V26": 0.100,
  "V27": -1.250,
  "V28": 1.900,
  "Amount": 5000.00,
  "Time": 86399.0
}
```

Training feature names

```
Time, V1, V2, V3, V4, V5, V6, V7,
```

Score Single

LR prob (fraud)	PCA score (fraudiness)	Fused score
1.0000	0.0000	1.0000
↑ thr 1.00	↑ thr 0.99	↑ or mode
Decision: **FRAUD**	Decision: legit	Decision: **FRAUD**

Verbose JSON


```
{
  "lr" : {
    "proba_fraud" : 1
    "threshold" : 0.9999998207740785
    "pred" : 1
  }
  "pca" : {
    "score_fraud" : 0
    "threshold" : 0.99
    "pred" : 0
  }
  "fusion" : {
    "mode" : "or"
    "w_lr" : 0.6
    "fused_thr" : 0.5
    "score" : 1
    "pred" : 1
  }
}
```

How this works

- **LR (supervised):** outputs a calibrated-like probability of fraud. We use the **PR-optimal threshold** learned during training (you can adjust it).
- **PCA (anomaly):** trains on normal transactions only; **reconstruction error** is min-max scaled to a fraudiness score in [0,1].
- **Fusion:**
  - **OR** → alert if either LR or PCA fires (higher recall).
  - **AND** → alert only if both fire (higher precision).
  - **AVG** → use weighted average of LR and PCA scores and compare to a fused threshold.

Best practices

- Keep thresholds stable across environments for consistent alerting.
- Monitor drift: if incoming feature distributions shift, retrain or re-fit PCA on recent normals.
- Log decisions with scores and thresholds for auditability.

Dataset

- Kaggle (ULB): https://www.kaggle.com/datasets/mlg-ulb/creditcardfraud