

Credit Card Fraud Detection MLOps Project

Overview

This project focuses on building an end-to-end MLOps pipeline for credit card fraud detection. It involves data preprocessing, model selection, hyperparameter tuning, and model deployment using tools like scikit-learn and MLflow.

Repository

You can find the project repository [here](#).

Project Structure

```
credit_fraud_detection/
  └── data/
    └── default_of_credit_card_clients.csv
  └── jupyter_notebooks_experiments/
    └── data_processing.ipynb
  └── .gitignore
  └── README.md
  └── requirements.txt
```

Data

The dataset used in this project is the [Credit Card Fraud Detection dataset](#). It contains information about credit card clients, including their payment history, bill statements, and whether they defaulted on their payments.

Setup

```
Clone the repository: bash git clone
https://github.com/vijaytakbhat2002/credit_fraud_detection_project_with_mlflow_dagshub_dvc.git
cd credit_fraud_detection
```

```
Install dependencies: bash pip install -r requirements.txt
```

```
Run the Jupyter notebook: bash jupyter notebook jupyter_notebooks_experiments/data_processing.ipynb
```

Model Training

The project uses two models for fraud detection: - **Logistic Regression**: Optimized using GridSearchCV for hyperparameter tuning. - **Random Forest**: Also optimized using GridSearchCV.

The best parameters for each model are logged using MLflow for reproducibility.

Evaluation

The models are evaluated using the following metrics: - Accuracy - Precision - Recall - F1 Score

MLflow Integration

MLflow is used to track experiments, log parameters, and metrics. You can view the experiments at:

```
http://localhost:5000/#/experiments/<experiment_id>
```

Future Work

- Model deployment and monitoring
- Integration with CI/CD pipelines
- Real-time fraud detection

Contributing

Contributions are welcome! Please open an issue or submit a pull request.

License

This project is licensed under the MIT License - see the LICENSE file for details.