Assignment

Description : Logistic Regression and SVM for Credit Card Fraud Detection In this assignment, you will use logistic regression and SVM to predict whether a credit card transaction is fraudulent or not using the Credit Card Fraud Detection dataset

Instructions:

1. Use the dataset as “creditcardfraud.csv”.
2. Preprocess the data by:
    - Dropping the Time column since it is not useful for classification.
    - Scaling the Amount column using a standard scaler.
3. Split the data into training and test sets using a 80:20 split ratio. Use random_state=42 for reproducibility.
4. Train a logistic regression model on the training set using the default hyperparameters.
5. Evaluate the model's performance on the test set using:
    - Confusion matrix
    - Classification report
6. Train an SVM model on the training set using the default hyperparameters. Evaluate the model's performance on the test set using the same evaluation metrics as in step 4.
7. Tune the hyperparameters of the logistic regression model and the SVM model using grid search cross-validation. Use a range of values for the hyperparameters of your choice. Choose the evaluation metric of your choice (e.g.Accuracy Score) to optimize the hyperparameters.
8. Train the logistic regression model and the SVM model with the optimal hyperparameters on the training set. Evaluate their performance on the test set using the same evaluation metrics as in step 4.
9. Compare the performance of the logistic regression model and the SVM model using the evaluation metrics from steps 4 and 7. Interpret the results and provide insights on which model performed better and why.
10. Summarize your findings and conclusions in a brief report.

Note: Use python programming language and any library of your choice.

Data set-https://drive.google.com/file/d/1cGPZnVkF4MIZDyaPZjhI6ZxwV8Ax_GjG/view?usp=sharing