Task 14

Machine Learning

Upload .py or Ipynb extension file on GitHub public repo “100DaysofBytewise" and share the link in the submission form by 25 July 2024.

Dataset : Titanic Dataset

1. **Evaluating Logistic Regression with Cross-Validation**
    - **Exercise:** Implement logistic regression and evaluate the model using k-fold cross-validation.
    - Compare the cross-validation scores with a single train-test split evaluation.
2. **Analyzing Overfitting and Underfitting in Decision Trees**
    - **Exercise:** Train a decision tree classifier with varying depths to analyze overfitting and underfitting.
    - Plot training and validation accuracies to visualize the effects.
3. **Calculating Precision, Recall, and F1-Score for Logistic Regression**
    - **Exercise:** Implement logistic regression and calculate precision, recall, and F1-score for the model.
    - **Tip: Discuss how these metrics provide insights into model performance in your week article.**
4. **ROC Curve Analysis for Decision Trees**
    - **Exercise:** Implement a decision tree classifier and plot the ROC curve.
    - Compute the AUC (Area Under the Curve) and interpret the results.
5. **Comparing Model Performance with and without Cross-Validation**
    - **Exercise:** Train logistic regression and decision tree models with and without cross-validation.
    - Compare their performance metrics, including accuracy, precision, and recall.