Assignment 2

CSC-7570-001 - AI Assisted Cyber Security

List of Packages used in ML-based Access Control Project

The list of packages I utilized in my machine learning model scripts includes a comprehensive set of tools for data manipulation, visualization, and machine learning model development and evaluation. For simplicity, I categorized them into two subheadings: data manipulation and visualization packages and machine learning and evaluation packages.

1. **Data Manipulation and Visualization**
   - ii. Numpy
     - provides support for large, multi-dimensional arrays and matrices
   - iii. Pandas
     - data manipulation and analysis
   - iiii. Matplotlib.pyplot
     - creating various types of plots and visualizations
   - iiv. Seaborn
     - a data visualization library built on top of Matplotlib
   - iv. os
     - enabling tasks like file and directory manipulation and path handling.

2. **Machine learning and Evaluation**
   - i. sklearn.preprocessing.StandardScaler
     - used for scaling) features by removing the mean and scaling to unit variance.
   - ii. sklearn.model_selection.train_test_split
     - splitting a dataset into training and testing sets
   - iii. sklearn.ensemble.RandomForestClassifier
     - a classifier based on the Random Forest algorithm
   - iv. lightgbm.LGBMClassifier
     - designed for gradient-boosting tasks
   - v. sklearn.metrics.classification_report
     - generates a classification report that includes precision, recall, F1-score, etc.
   - vi. sklearn.metrics.confusion_matrix
     - computes a confusion matrix
   - vii. sklearn.metrics.accuracy_score
     - computes the accuracy of a classification model
   - viii. sklearn.metrics.precision_recall_fscore_support
     - It computes precision, recall, F1-score