**README: Amazon Employee Access Classification Individual Project**

**Project Description**

This project aims to predict the approval or denial of access applications for Amazon employees based on 8 input features. It uses several machine learning algorithms (KNN, Decision Tree, Bagging, Random Forest, and Stacking) to build the classification model using Python. The project is saved in a Jupiter notebook file.

**Files Included**

* **Daniela\_Santibanez\_project.ipynb:** The Jupyter Notebook file including the entire code for data pre-processing, model training, and evaluation.
* **amazon\_employee\_access\_train.csv:** The dataset training set files used to initially build the model.
* **amazon\_employee\_access\_test.csv:** The dataset test file for which prediction can be made.

**Requirements**

The following software and libraries must be installed:

* Python 3.11 or above
* Jupyter Notebook
* pandas
* numpy
* scikit-learn
* matplotlib

**Instructions**

1. **Clone/Download the Repository:**

* Clone the repository or download the project files to your local computer.

1. **Ensure File Placement**

* Ensure the **amazon\_employee\_access\_test.csv** is located in the same directory as the **Daniela\_Santibanez\_project.ipynb** file.

1. **Run the Notebook**

* Open Jupyter Notebook in your terminal.
* Open the **Daniela\_Santibanez\_project.ipynb** file in Jupyter notebook.
* Replace “**amazon\_employee\_access\_train.csv**”, with “**amazon\_employee\_access\_test.csv”** when loading the data set into the df in the first cell.
* Execute cells sequentially to train and evaluate the model.

**Output**

* Predictions for approval/denial of applications
* Evaluation metrics of the best performing ML model including accuracy, precision, recall, F1-score, Matthews correlation coefficient, and a confusion matrix.
* Visualization for PCA and confusion matrix to show insights in model performance.

**Notes**

* Comments are included to help explain each step in the model building process.

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