README

Introduction

This README provides an overview of the code used to preprocess the Iris dataset through standardization and normalization, followed by visualizing the results using pairwise scatter plots. The primary libraries used are pandas, scikit-learn, seaborn, and matplotlib.

Libraries Required

To execute the code, you need to have the following Python libraries installed:

- pandas
- scikit-learn
- seaborn
- matplotlib

Automatic Installation

The script checks for the required libraries and installs them automatically if they are not already present. You can also install these libraries manually using pip:

```
pip install pandas scikit-learn seaborn matplotlib
```

How to Use

1. **Load the Iris dataset**:
    - The Iris dataset is loaded using the load_iris function from sklearn.datasets.
    - The dataset is converted into a pandas DataFrame for easier manipulation.
2. **Standardization**:
    - Standardization is performed using StandardScaler from scikit-learn.
    - Each feature is transformed to have a mean of 0 and a standard deviation of 1.
    - A new DataFrame, df_standardized, is created to store the standardized features along with the species information.
3. **Normalization**:
    - Normalization is performed using MinMaxScaler from scikit-learn.
    - Each feature is scaled to a given range, typically between 0 and 1.
    - A new DataFrame, df_normalized, is created to store the normalized features along with the species information.

4. **Visualization**:
    - Pairwise scatter plots of the standardized data are created using seaborn.pairplot.
    - The plots are colored based on the species and different markers are used for each species.
    - Pairwise scatter plots of the normalized data are also created in a similar manner.

Code Execution

To execute the code, simply run the provided script. It will perform the preprocessing steps and display the visualizations for both standardized and normalized data.

Feel free to modify the code as per your requirements