Histogram Visualization and Statistical Analysis Documentation

This Python script utilizes the NumPy and Matplotlib libraries to perform statistical analysis and create a histogram of a given dataset representing the frequency of time intervals. The script calculates and displays the average, variance, and standard deviation of the dataset. Dashed lines on the histogram highlight key statistical points.

1. Dataset

- The dataset named **frequency** represents the frequency of time intervals.
- It contains a list of integer values representing the delivery times.

2. Average Calculation

- The script calculates the average (**average**) of the dataset by summing all values and dividing by the length of the dataset.

3. Variance Calculation

- The script calculates the variance (**variance**) by determining the squared differences of each value from the mean and averaging them.

4. Standard Deviation Calculation

- The standard deviation (**stander_deviation**) is then calculated as the square root of the variance.

5. Histogram Plotting

- Matplotlib's **plt.hist()** function is employed to create a histogram of the dataset.
- Parameters such as the number of bins, transparency (**alpha**), color, and edge color are specified.

6. Dashed Lines

- Dashed lines are added to the plot to highlight key statistical values:
    - A red dashed line indicates the maximum frequency.
    - A blue dashed line indicates the average frequency.
    - A green dashed line indicates the minimum frequency.

7. Visualization

- The script includes labels, a title, and legends for better interpretation of the visualization.
- The final plot is displayed using plt.show().

Additional Notes

- The script is designed to provide insights into the distribution of the given time intervals and the statistical properties of the dataset.
- Users can easily adapt the code for different datasets by modifying the **frequency** list.
- The visualization enhances the understanding of the variability within the dataset.