Introduction to Data Science and AI: LAB 2

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1. Requirements

1.1 **Integrated Development Environment (IDE)**: PyCharm.

1.2 **Version Control**: Git and TortoiseGit.

1.3 **Compiler & Interpreter**: Python 3 (WinPython on Windows or Anaconda on Linux).

1.4 **Additional Libraries**: Pandas, NumPy, SciPy, Matplotlib, Sklearn, (and PyTorch).

1.5 **Data Sets**: Iris and MNIST

2. Assignment

2.1 Load data set IRIS (https://archive-beta.ics.uci.edu/dataset/53/iris) by using NumPy.

2.2 Compute and report eight descriptive metrics (max, min, mean, standard deviation, variance, median, .25 quartile, .75 quartile) of IRIS for all the flower types.

2.3 Draw and report eight descriptive metrics (max, min, mean, standard deviation, variance, median, .25 quartile, .75 quartile) of IRIS for all the flower types.

2.4 Compute and report eight descriptive metrics (max, min, mean, standard deviation, variance, median, .25 quartile, .75 quartile) of IRIS for each flower type.

2.5 Draw and report eight descriptive metrics (max, min, mean, standard deviation, variance, median, .25 quartile, .75 quartile) of IRIS for each flower type.

2.6 Compute and report the correlation between each pair-wise feature for all the flower types.

2.7 Compute and report the correlation between each pair-wise feature for each flower type.

2.8 Draw and report the histogram chart for each feature for all the flower types.

2.9 Draw and report the histogram chart for each feature for each flower type.

2.10 Draw and report the box chart for each feature of all the flower types.

2.11 Draw and report the box chart for each feature of each flower type.

2.12 Draw and report the distribution chart for each feature of all the flower types.

2.13 Draw and report the distribution chart for each feature of each flower type.

2.14 Draw and report the scatter chart for each pair-wise feature of all the flower types.

2.15 Draw and report the scatter chart for each pair-wise feature of each flower type.

2.16 Draw and report the bubble chart for each pair-wise feature of all the flower types.

2.17 Draw and report the bubble chart for each pair-wise feature of each flower type.

2.18 Draw and report the density chart for each pair-wise feature of all the flower types.

2.19 Draw and report the density chart for each pair-wise feature of each flower type.

2.20 Draw and report the parallel chart for all the flower types.

2.21 Draw and report the deviation chart for all the flower types.

2.22 Draw and report the Andrews curves chart for all the flower types.

3. Submission

3.1 Write the report in LaTeX.

3.2 The report should have code, results, chart figures, and explanation.

3.3 The report should be submitted in one week after the lab date.