MIDTERM ESSAY

Applied Probability and Statistics for IT

# Requirements

**Part 1:** Survey all functions of the Statistics library in Python. Correspondingly, each function needs to be explained about its usage, input parameters, meaning of returned results, and example code.

<https://docs.python.org/3/library/statistics.html>

**Part 2:** Survey about Histogram equalization algorithm for image processing.

- Survey about the problem, histogram approach, formula, algorithm...

- Write an illustrative program.

# Regulations

Students need to submit a document file and 2 sourcecode files.

* The document file is in Word format (.doc/docx), named by your StudentID, eg. 52000000.docx, using our faculty’s format, from 15 to 25 pages. English is required for high-quality 100% English classes only. The structure of this document should be:
  + Chapter 1: Statistics library in Python
    - Overview about statistics library in Python
    - Each function needs to be explained about its usage, input parameters, meaning of returned results, and example code.
    - Give your own example code. Take screenshots for their running.
  + Chapter 2: Histogram equalization algorithm
    - State the problem, constrains/conditions (if any), method/algorithm,
    - Examples,
    - Your comment, analysis, evaluation...
  + Chapter 3: Implementation
    - DO NOT just copy your code in this chapter.
    - Instruction for building and running your sourcecode.
    - Screencaptures of your experimental results.
  + References
    - Use the faculty’s format.
* There are 1 Python sourcecode file for each requirement. The sourcecode files are named by your StudentID, eg. 52000000\_Part1.py and 52000000\_Part2.py
  + In part 2, you can use libraries for supportive functions only.
* Format violations will cost from 10% to 50% of your total scores.
* You should solve and submit this report to your theory Google classroom within 14 days, from the beginning of October 24th 2022 to the end of November 6th 2022. Late submissions are not accepted. Submissions via email are not accepted.
* This is an individual final report. Any case of plagiarism will get 0.

# Rubric

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Criteria |  | Scale | | | Self-  evalutaion | Reason |
|  | Score  /10 | 0 score | 1/2 score | Full  score |  |  |
| Chapter 1 | 2 | Do  nothing  or  wrongly. | Not enough  details, no  example, no  comment. | Detailed  explanation,  good  examples and  comments. |  |  |
| Chapter 2 | 2 | Do  nothing  or  wrongly. | Not enough  details, no  example, no  comment. | Detailed  explanation,  good  examples and  comments. |  |  |
| Chapter 3 | 1 | Do  nothing  or  wrongly. | Not enough  details. | Detailed  explanation. |  |  |
| References | 1 | No  reference. | Wrong  format. | Right format. |  |  |
| Sourcecode Part 1 | 2 | Error. | Correct but  bad  performance. | Correct and  good  performance. |  |  |
| Sourcecode Part 2 | 2 | Error. | Correct but  bad  performance. | Correct and  good  performance. |  |  |
| **Total** | 10 | Result | | |  |  |