PROJECT 2 (20%)

STQD6114 UNSTRUCTURED DATA ANALYTICS

SEMESTER 2 2024/2025

Task 1: Image data analysis – 10%

1. **Data acquisition**: Find any **two** images that consists of color and grey image, based on the following themes;
   i. Flower   ii. Scenery   iii. Person   iv. Building   v. Other images besides part i to iv.
   Hence, you must have **ten (10)** images all together. Please name your image as Flower1 for coloured flower and Flower2 for grey image flower, Scenery1 for coloured scenery, Scenery2 for grey image scenery, and etc.

2. On each image in part (1) above, perform the following analysis using R;
   i.   Edge detection
   ii.   Splitting & concatenating image
   iii.   Image transformation such as resizing, rotation, scaling & cropping
   iv.   Filtering image
   v.   Rectangular, circular and fuzzy selection
   vi.   Blurry & sharpen
   vii.   Segmentation
   viii. Histogram equalization
   ix.   Morphological operations

3. Find two (2) noise images which consisted of colour and grey images each. Hence, you will have four (4) noise images altogether. Then, perform the following analysis using R;
   i.   Image denoising
   ii.   Morphological operations

Note: For this task, please compile your R Script and the related output for image analysis in one word/PDF file.

Task 2: Audio data analysis – 10%

1. Find at least **two** audio data.
2. Perform the relevant analysis with relevant visualization on the selected audio data above. You must include the analysis on wave signal and family of Fourier transform (FFT/STFT, etc.).
3. Write an article journal that is equipped with relevant outputs and interpretations on any topics. Your journal article must include the following sections:
   i. Abstract.
   ii. Introduction.
   iii. Literature review.
   iv. Methodology.
   v. Result and discussion
   vi. Conclusion.
   vii. References

Your **two** audio data can be in the similar category or not. However, it is advisable to find the same audio in the similar category to ease the process of writing the article journal. Your journal article should be at least five pages long using times new roman, font 12 and spacing 1.5 excluded the figure. Please refer to the file "How to Write a Journal Article" for more information on each section above, as well as other relevant sources.

Due date: 29 June 2025

Additional information:
1. Please attach all your data sets (image and audio data) and RScript for Task 2.
2. Your image and audio data must be unique, which means cannot same with other person
3. Please be noted that you cannot copy/plagiarism other members project.
4. Please submit separate PDF/word file for Task 1 and Task 2
5. Similarity check will be conducted at random, to ensure the originality of your submission. Penalty will be imposed for those who been detected with high plagiarism and highly usage of AI assistance.