PROJECT 3 (20%)

STQD6114 UNSTRUCTURED DATA ANALYTICS

SEMESTER 2 2021/2022

Task 1: Image data analysis.

Part A

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. Any other theme
   Hence, you must have **ten** images all together. Please name your image as Flower1 for colored flower and Flower2 for grey image flower, Scenery1 for colored scenery, Scenery2 for grey image scenery, and etc.
2. On each image 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 & fuzzy selection.
   vi. Blurry & sharpen
   vii. Segmentation
   viii. Histogram equalization

Part B

1. Based on the images in folder "Noise Image", perform the following analysis;
   i. Image denoising
   ii. Morphological operations

Task 2: Audio data analysis.

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. Title
    ii. Abstract.
    iii. Introduction.
    iv. Literature review.
    v. Methodology.
    vi. Result and discussion
    vii. Conclusion.
    viii. 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 three 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. You are also advisable to refer to the additional references link provided in the last page of the lecture notes.

Due date: 8 July 2023

Additional information:

1. Please attach all your data sets (image and audio data) and all the codes used in both tasks (in R script or attached as appendix).
2. Your image and audio data cannot be same with other groups.
3. This is a group project with a maximum member of two. You can also perform this project as individual.