**BEJ42903 (IMAGE PROCESSING)** **Prepared by: Ts. Dr. Suhaila Sari,**

**Sem 2 2022/2023**

**ASSIGNMENT (GUI DEVELOPMENT FOR IMAGE PROCESSING APPLICATION) (20%)**

***Read the instructions carefully, and complete your project correctly.***

## A. COURSE LEARNING OUTCOME(S)

CLO 1: select suitable techniques to implement for solving image processing problems (LOD2-PLO2-C4)
CLO 2: investigate the effectiveness of different techniques depending on specific needs of image processing application to achieve reasonable conclusions (LOD4-PLO4-C4)
CLO 3: construct suitable solution that meet specified needs with appropriate tool consideration for image processing applications (LOD5-PLO5-P5)
***CLO 4:*** *demonstrate the ability to perform image processing task ethically (LOD15-PLO8-A3)*

## B. INSTRUCTION FOR ASSIGNMENT

**[Form a group of 2 students. Only for topic 3: 3 students/group]**

1. Select **1 topic** from proposed list below. You can choose your group topic in this link: (IP 2 2223 assignment topic selection.xlsx
   First-come-first-serve based. No redundant topic. If the topic has been selected, please choose another topic for your group)

   Topic 1: INTENSITY TRANSFORMATIONS & SPATIAL FILTERING
   Topic 2: FILTERING IN THE FREQUENCY DOMAIN
   Topic 3: IMAGE SEGMENTATION
   Topic 4: IMAGE RESTORATION &RECONSTRUCTION
   Topic 5: MORPHOLOGICAL IMAGE PROCESSING

2. Please **provide and discuss real-world problems** related to selected topics. **Justify** why do you choose these problems. Provide **20 example images** for the real-world problem mentioned. Place them in a folder named "Topic name Test Image Database". Provide **a list in a text file providing the details** of each image (if image obtained from internet, provide website link, if captured by your own, provide camera details, image size & type).

3. Propose **1 technique** to solve the issues in Instruction 1 (1 technique for each issue). **Justify** why do you choose this technique. Find **1 recent publication** in Scopus-indexed journals or conference proceedings (year 2012 to 2023) related to the method selected. From your reading, write **in your own word** in your report on how the technique is performed.

4. Develop **an iOS mobile application** for suggested image processing technique of selected topic by using an iOS application development software. You may choose any software that you think suitable, especially for image processing purpose. **Justify** why you select the iOS application development software. The GUI must have at least these functions: (i) Open Image (ii) Show image for original image (iii) Proposed image processing technique execution button (iv) Show image for output image from

proposed method.

5. **Write and show all** the **results for each image**. Provide all the **print-screen** of **your developed GUI for each part**. **Analyze** and **discuss** the **effects** and relate them to **theoretical justification** (based on papers in Instruction 3).

6. Write a **short report** consisting the details required in **Instruction 1-5**. Your report must discuss in detail for each instruction part **following the instruction's sequence**. **Cite** and **provide** the **references** at the end of your report.

## C. ASSESSMENT

Tugasan (*Assignment*) : 20 %

**TARIKH PENTING**/ IMPORTANT DATES

1. **PROGRESS:**
   [CLO 3] **Progress Report** (25/05/2023-**Week 9**)- Thursday before 11.59 PM) 3%
   (Submission: Softcopy (AUTHOR)
   Must include the following details:
   1. Group Member Task Distribution
   2. Minute of Meeting (At least once)
   3. Images for Database
   4. GUI Design

2. **FINAL SUBMISSION** (Softcopy (AUTHOR)
   a. [CLO 1] **Project report** (Softcopy) 5%, (07/06/2023-**Week 10** Wednesday before 11.59 PM) (Submission: Softcopy (AUTHOR)

   b. [CLO 3] **Image Database** 2% & **GUI development files** (ALL sources and APK file) (Softcopy) 5%, (07/06/2023-**Week 10** Wednesday before 11.59 PM) (Submission: Softcopy (AUTHOR)

   c. [CLO 4] **Presentation** (10 minutes explanation & demonstration) 3%, (14/06/2023-**Week 11** Wednesday)

   d. [CLO 4] **Q&A Session** (5 minutes) (14/06/2023-**Week 11** Wednesday) 2%

3. PEER EVALUATION – evaluate each members at the end of the assignment based on the contribution and commitment to complete the assign tasks, marks received from other members will be averaged and weighted to the overall assessment. (The average peer-to-peer mark from other team members will be multiplied to team's assignment total mark. The mark will be given to respective evaluated team member.)
   Evaluation Form will be given separately.

Example:

For group member no. 1, receive 30/40 from group member 2, 20/40 from group member 3, 35/40 from group member no. 3. Average peer evaluation mark for group member no. 1 is 28.3/40.

Say the group marks for proposal is 2%, final report is 6%, video demonstration is 4%, Q&A is 3%, then final marks for group member no. 1 is 10.61%, where 28.3/40*2%=1.42% for proposal, 28.3/40*6%=4.25%, 28.3/40*4%=2.83% for video demonstration, 28.3/40*3%=2.12% for Q&A.

4. Here is the example of GUI for your project layout. Make sure to have the basic required parts in your GUI.