Homework 2

1. Create a binary mask for the region of interest in the image, then apply low-pass filters (Gaussian and Average filters) and high-pass filters (Laplacian and Prewitt filters) in **MATLAB**.
2. Implement both the Floyd-Steinberg and Jarvis-Judice-Ninke dithering algorithms on the image in either **Python or MATLAB**, then compare the results obtained from each method.
3. Explain what a Kuwahara filter is, and apply it to the image using either **Python or MATLAB** to demonstrate its effect.
4. Take any image and apply the Fourier Transform to this image and the following filters:(**Python or MATLAB)**
   (b) Butterworth filters
   (c) Gaussian filters
5. Take an image and quantize it to 32 grayscale levels using only the imresize function in **MATLAB**, and write the steps you followed in the process.

Submission Guidelines:

- Create a **public GitHub repository** for your work.**Note**: Repository should be public
- For **MATLAB**:
  - Provide the MATLAB code in a **Live Script**, ensuring that both the code and its corresponding results are displayed below it. Finally, save the entire script as a **PDF** for submission purposes (note: do not upload the .mlx file; instead, export the .mlx file as a PDF before pushing it to Git).
- For **Python**:
  - Upload the Python files directly.
- Organize all the files into a single folder.
- Name your files as follows:
  - **Question1** (for MATLAB Live Script PDF)
  - **Question2** (for MATLAB Live Script PDF or Python file)
  - And so on for each question.
- Push the folder to your GitHub repository and provide the **GitHub link**.
  Final submission:
- You are required to submit **only the GitHub link** for the assignment.