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| **Part A** | | |
| **Experiment 08:** | | |
| **Aim:**  Implementation of frequency domain filtering technique (Low pass filter)   1. Ideal Low Pass filter 2. Butterworth Low Pass filter 3. Gaussian Low Pass filter | | |
| **Prerequisite:**   1. Basic image Processing command 2. MATLAB | | |
| **Objective:**   1. Image Enhancement in frequency domain   **Outcome:**   1. Compute and analyse effects of various image transformation techniques of frequency domain. | | |
| **Theory:**  **Ideal low pass Filter:**      **Butterworth Low Pass filter**      **Gaussian Low Pass filter** | | |
| **Procedure:**  **Ideal Low pass filter:**   1. Read grey scale image in one variable 2. Convert data type to double 3. Extract the values of rows & columns of any first image 4. Input the cut-off frequency. 5. Design the filter according to formula. 6. Apply the filter on image 7. Display result.   **Butterworth Low pass filter:**   1. Read grey scale image in one variable 2. Convert data type to double 3. Extract the values of rows & columns of any first image 4. Input the order of filter. 5. Input the cut-off frequency. 6. Design the filter according to formula. 7. Apply the filter on image 8. Display result.   **Gaussian Low pass filter:**   1. Read grey scale image in one variable 2. Convert data type to double 3. Extract the values of rows & columns of any first image 4. Input the cut-off frequency. 5. Design the filter according to formula. 6. Apply the filter on image 7. Display result. | | |
| **Part B** | | |
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| Subject: Image Processing | | |
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| Code:  **IDEAL LPF:**    **BUTTERWORTH LPF:**    **GAUSSIAN LPF:** | | |
| Input & Output:  **INPUT:**    **OUTPUTS:** | | |
| **Observations & Learning:** From the above experiment, we observed and learned about various frequency domain image processing techniques, namely: Ideal, Butterworth and Gaussian low pass filter. We implemented the same on an image choice of our own. | | |
| **Conclusion:** Thus, the aim of implementation of frequency domain image filtering processes (Low pass filters) is completed. | | |
| **Questions:**   1. **What are the application of frequency domain filtering (Low Pass)?**   A low pass filter is the basis for most smoothing methods. An image is smoothed by decreasing the disparity between pixel values by averaging nearby pixels. Using a low pass filter tends to retain the low frequency information within an image while reducing the high frequency information.  Low pass filter removes the high frequency components that means it keeps low frequency components. It is used for smoothing the image. It is used to smoothen the image by attenuating high frequency components and preserving low frequency components. | | |