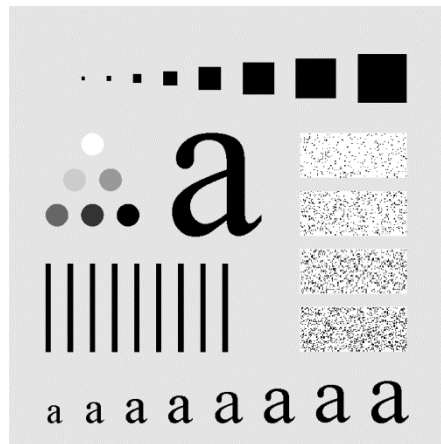


PROJECT 04-01

Image Filtering in Frequency Domain

- (a) Implement the Gaussian lowpass filter function. You must be able to specify the size, $M \times N$, of the resulting 2D function.
- (b) Conduct the Gaussian lowpass filter on "Fig_characters_test_pattern.tif" with cutoff frequencies at radii values of 5,15,30,80 and 230 respectively.
- (c) Compare the results with the original image.



PROJECT 04-02

- (a) Based on the PROJECT 04-01, implement the Ideal lowpass filter and Butterworth lowpass filter ($n=2$ for Butterworth).
- (b) Conduct these two filters on "Fig_characters_test_pattern.tif" with cutoff frequencies at radii values of 5,15,30,80 and 230 respectively.
- (c) Compare the results with the original image.

PROJECT 04-03

- (a) Implement the Ideal, Gaussian and Butterworth highpass filter ($n=2$ for Butterworth).
- (b) Conduct these three filters on "Fig_characters_test_pattern.tif" with cutoff frequencies at radii values of 15,30 and 80 respectively.
- (c) Compare the results with the original image.