

# Noise Removal

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- 1) Generate 500 integer uniform random numbers between 0 & 20. Plot a histogram of these numbers.  
Hint: Use rand() for uniform random numbers. See help.
  
- 2) Generate 500 integer Gaussian random numbers and plot their histogram. These random numbers must have a mean of "0" and variance of "20".  
Hint: Use randn() for Gaussian random numbers. See help.
  
- 3) Given an input image (gray-scale) add noise to it. Use "bat", "London", "woman".
  - i) Salt and Pepper Noise
  - ii) Gaussian Noise
  
- 4) Download the noisy image dataset from the website and remove Gaussian noise by applying :
  - i) Mean filter
  - ii) Geometric mean filter
  - iii) Harmonic mean filter
  - iv) Contra-harmonic mean filter
  
- 5) Remove salt-pepper noise by applying
  - i) Median filter
  - ii) Min-Max filter
  - iii) Mid-point filter
  - iv) Alpha trimmed median filter

# Histogram Techniques

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1) Input a gray scale image and plot its histogram. Verify your result for “arab\_men” from the slides.

2) Implement “Histogram Equalization”. Later convert this as a function.

*Function [outImage] = my\_histo\_eq( im )*

3) Implement “Histogram Matching”. Later convert this as a function.

*Function [outImage] = my\_histo\_matching( im, ref\_im )*