PROJECT-1

1. (Image denoising) Please implement the followings and analyze the results.

    1) Generate the following noises, and add them to the ground-truth images.

     a) Impulse noise   b) Gaussian noise   c) Uniform noise

        (Hint : Use uniform noise generation such as rand() function in MATLAB)

    2) Implement the following denoising filters, and applied them for denoising.

      a) Gaussian filter   b) Bilateral filter   c) Median filter

    3) Please compare and analyze the results with subjective and objective (PSNR) measurements.

2. (Edge detection) Please implement the followings and analyze the results.

    1) Implement 1st order edge detector. (e.g., Sobel, Prewitt)

    2) Implement 2nd order edge detector. (e.g., LoG)

    3) Please compare and analyze the results.

Tip

1. DO NOT use the library functions. (filter, conv, imnoise, …)

  Simple basic functions are allowed to use. (e.g., sin, cos, rand, randn, min, max, median, …)

  → It is highly recommended to use the library functions for comparisons.

2. Apply various options as much as possible. (e.g., varying noise energy, filter parameters, …)