

Image Processing

- The program is written in Python 3.7.
- The purpose of this program is to apply low-level filtering techniques to an image to get a smooth curve for further processing.
- Gaussian filter was created of $n \times n$ (decided by the user), which was later convolved through the image to apply the filter.

Input/Output:

- The program loads an image file provided on the command line and decompress it into a numpy array.
- Split the input image into 3 channels (R, G, B)
- Compute a two-dimensional isotropic Gaussian kernel.
- Convolve the Gaussian kernel with each channel of the image.
- Save the result.

Notes:

- With a smaller kernel for example 3×3 , it looks like the image does not get blurred as expected as the value for sigma is higher. I had to use a kernel of size 9×9 with a 4.0 value for sigma to get desired result. Any suggestions about it?

Running the program

- Install Libraries:
 pip3 install numpy
 pip3 install imageio
 pip3 install PIL
- python3 hw1.py --k *value* --sigma *value* input_image.jpg output_image.jpg

Sample output

- 1) Original Image
- 2) Filtered_Image(size(kernel) = (5,5), sigma = 2.0)
- 3) Filtered_Image(size(kernel) = (5,5), sigma = 2.0)
- 4) Filtered_Image(size(kernel) = (5,5), sigma = 2.0)









