

CSE-3403

Video Analytics

Digital Assignment 1

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Introduction:

Denoising images is a premiere field in Image and Video Analytics. There have been multiple methods to impart artificial noise into an image. There are multiple tools available to denoise such noisy images. OpenCV is one such library which gives access to multiple filters that enable one to apply denoising to a noisy image. This work explores the different types of noise algorithms and denoising methods provided by OpenCV.

Procedure:

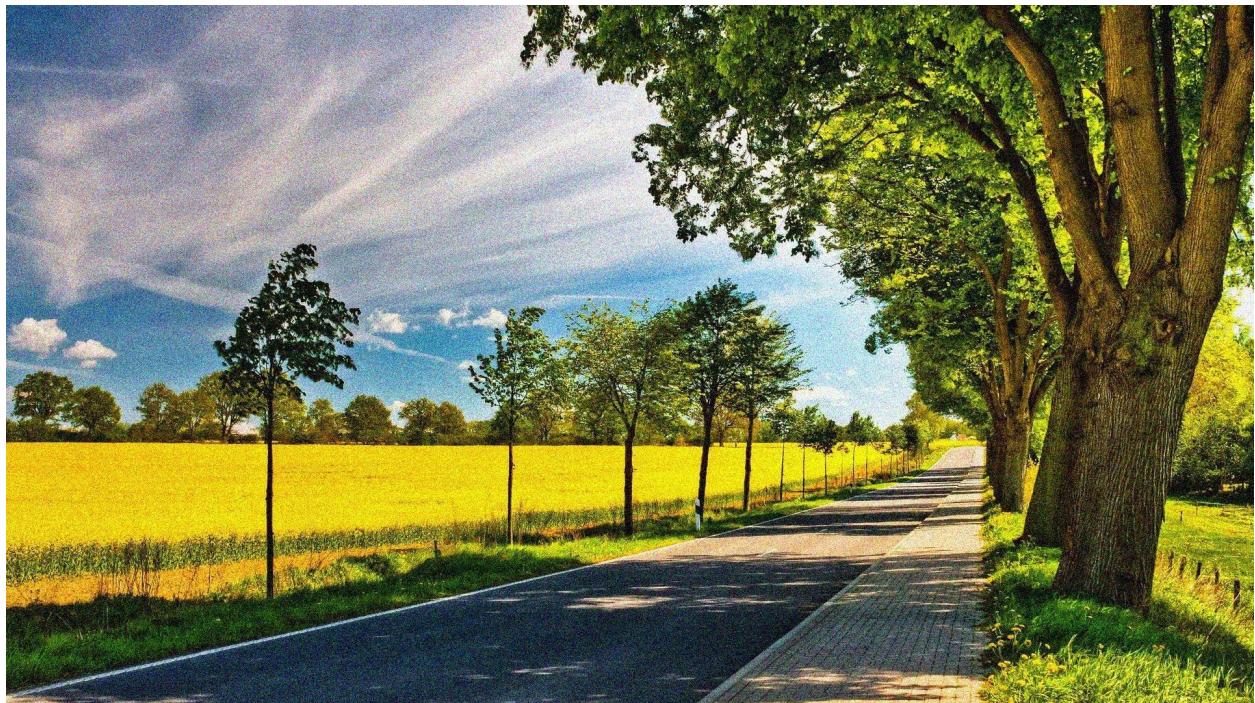
1. Import any image using OpenCV's imread function.
2. Define a function to perform Gaussian Noise, Salt & Pepper Noise and Speckle Noise.
3. Call the function, pass the original image and get the noisy images from it.
4. Denoise the images using various methods like Averaging, Gaussian Blur, Median Blur and Bilateral Filter.
5. Use OpenCV's imwrite function to save the images locally.

Observation:

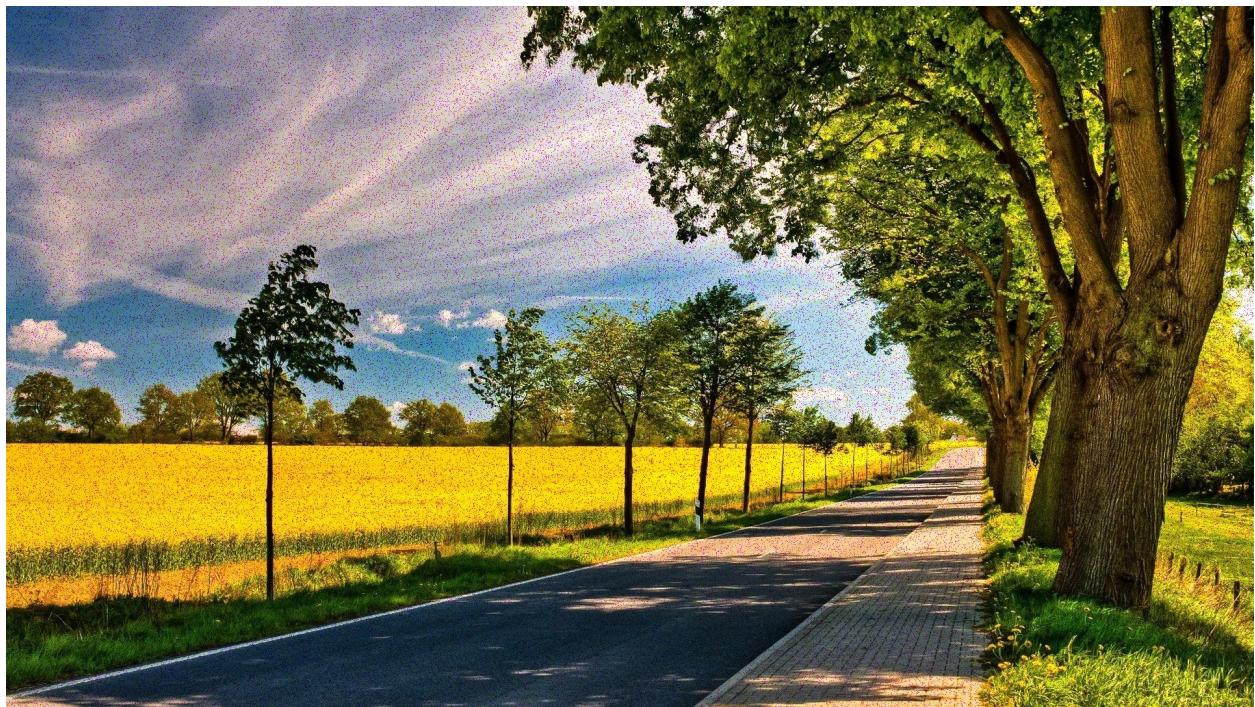
Original Image



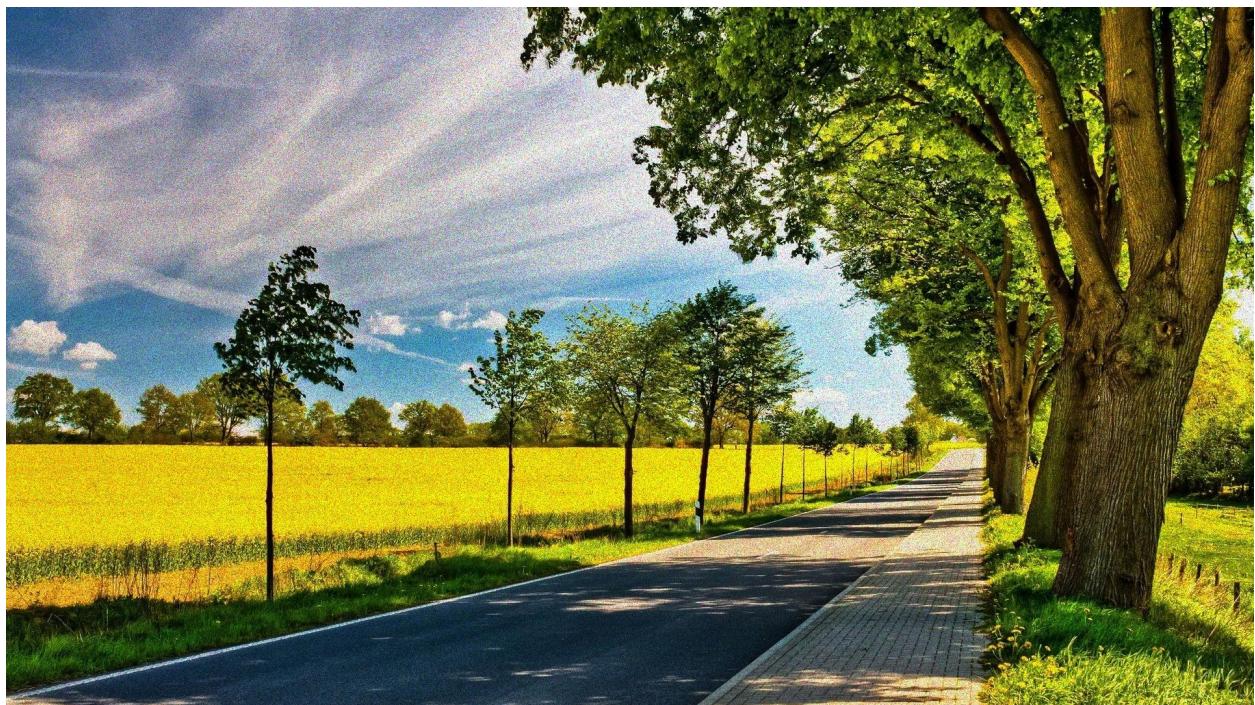
Gaussian Noise



Salt & Pepper Noise



Speckle Noise



Denoising Methods*

Image	Averaging	Gaussian Blur	Median Blur	Bilateral Filter
Gaussian Noise				
Salt & Pepper Noise				
Speckle Noise				

*The full size Images are in a separate folder for more clear viewing

Link for Code:

<https://github.com/srivarshan-s/Video-Analytics-Assignment.git>

Results:

From the above comparison we can see that different denoising methods have varying degrees of success in noise compression. The best results however can be seen from the application of Median Blurring on the Salt & Pepper Noise. The rest are all passable as denoising filters and can be used for noise compression.