Visual Recognition

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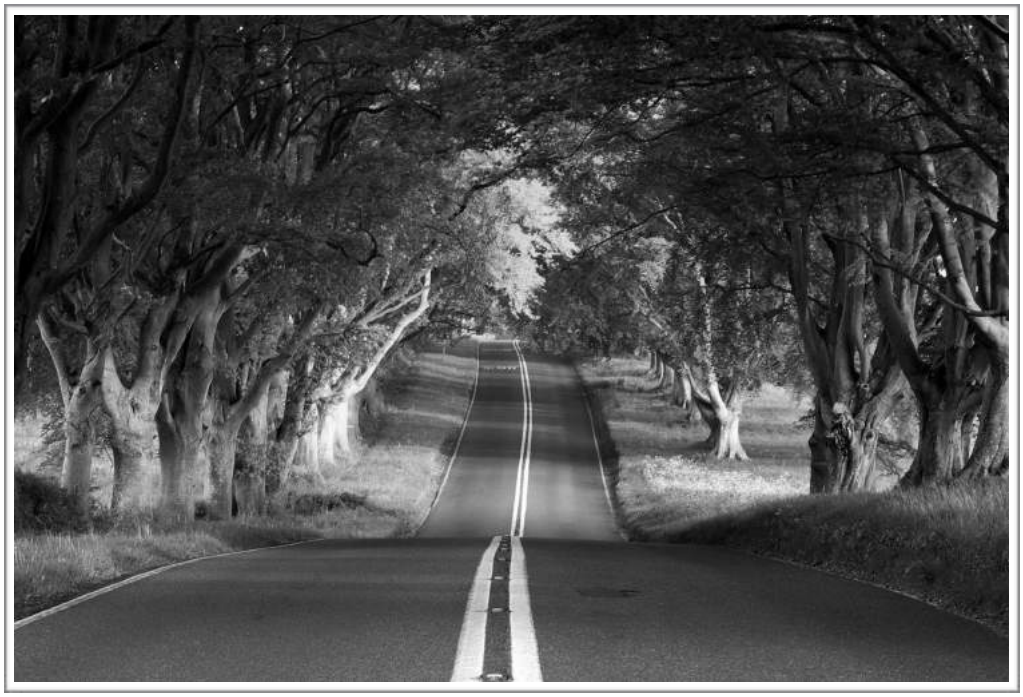
With the help of openCV library of python we will be applying the following image processing techniques on the given image:-

1) Gray scale conversion
2) Smoothening/ Blurring
3) Sobel edge detection
4) Canny edge detection

1) Gray scale conversion



Gray scale image contains only shades of gray and no other colour. In this form the colour components are removed and intensity is represented on scale of zero intensity(black) to full intensity(white). We prefer this format in computer vision because colour can add complexity of the model.

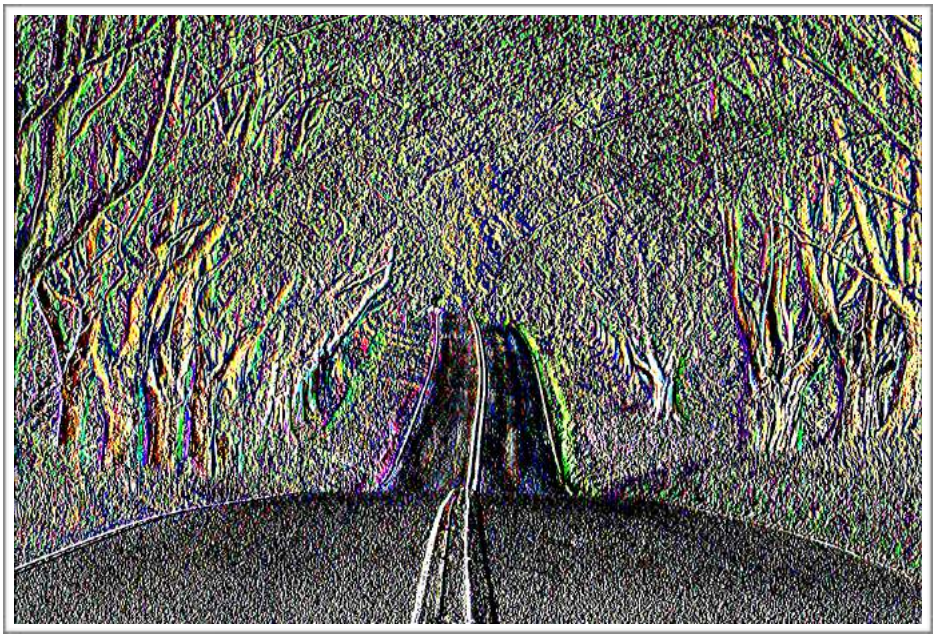
2) Smoothening/ Blurring

Smoothening an image means removing the noise component from it. It is used for the enhancement of the image quality.

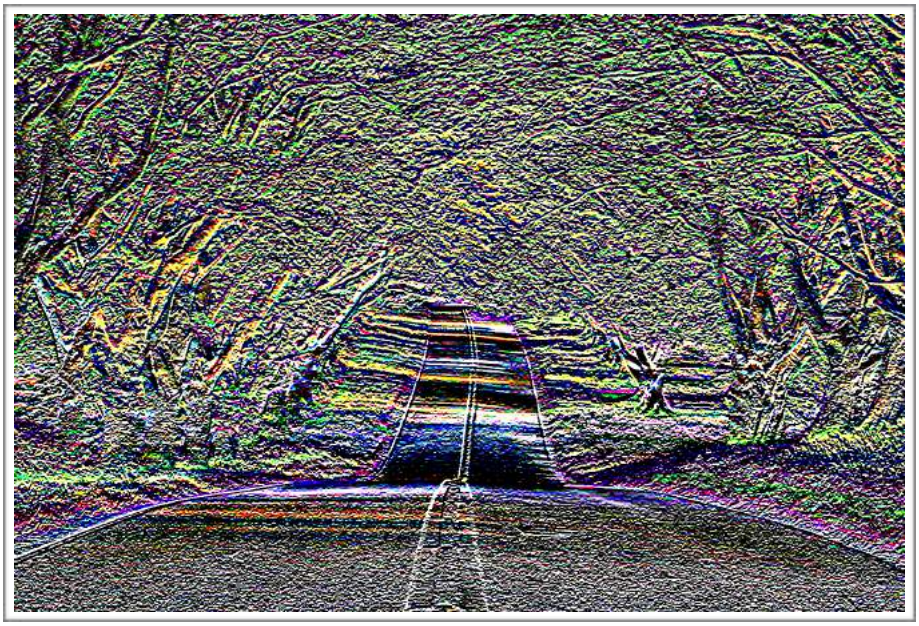
3) Sobel edge detection

Edge detection allows us to find points in the image where brightness of the pixel intensities changes distinctly. Sobel edge detector is a gradient based method. It calculates the first derivatives of the image for X and Y axes.

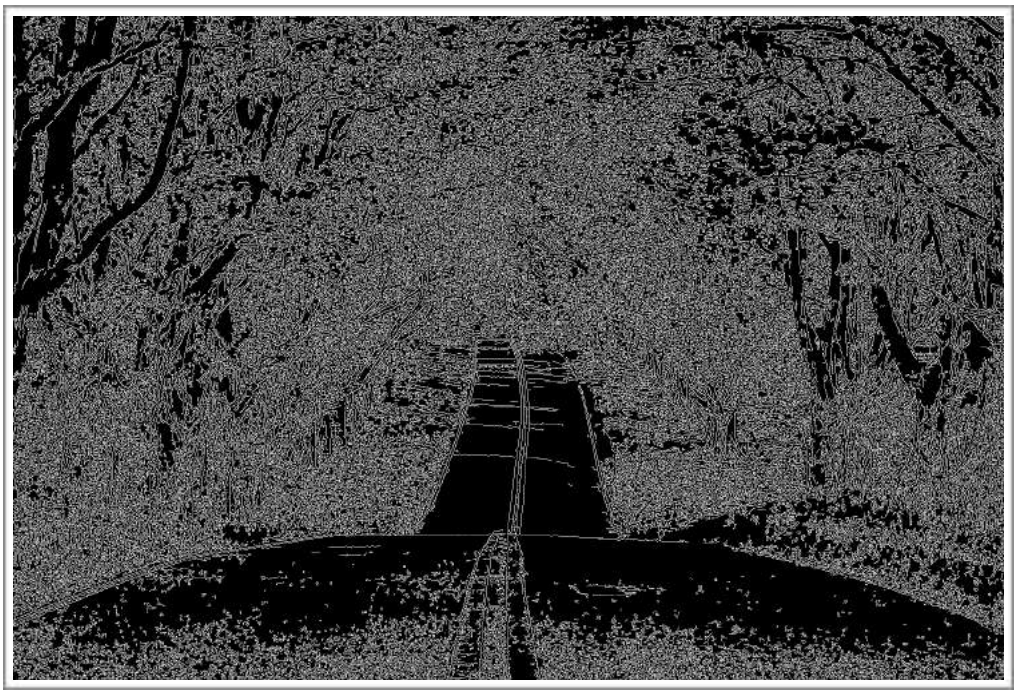
Sobel X:



Sobel Y



4) Canny edge detection



It is also an edge detection tool like sobel edge detection, but sobel edge detection cannot produce good edge detection with thin and smooth edges also the pixel of the images are noisy. With canny edge detection we can set the threshold value ourselves for smooth edge detection and without any noise pixels in the image.