COMPUTER VISION / DIGITAL IMAGE PROCESSING EXERCISE 2

Image Enhancement

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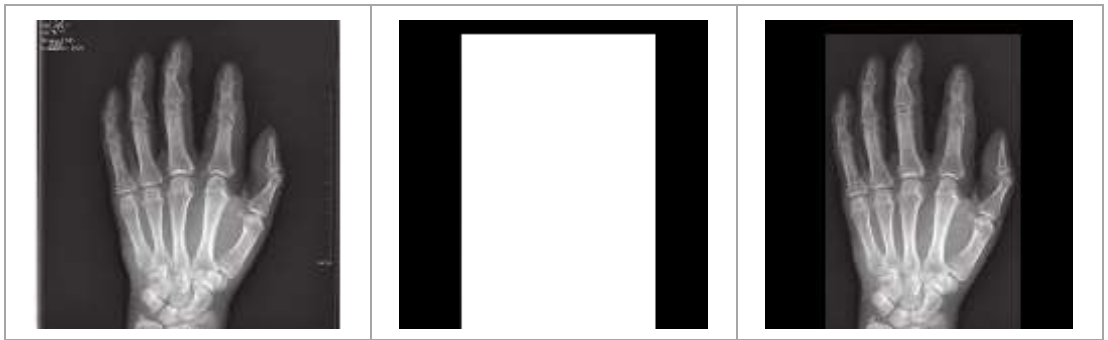
1. Develop and demonstrate an application to read a grayscale image and automatically crop the object in the image while removing the background pixels (assume that the background is in white color). [Get the fingerprint image]

Input	Output

2. Develop and demonstrate an application to read a grayscale image and crop a specified region from the image using logical operations. [Get the X-ray image]



Input	Mask	Output

3. For the given number plate image, develop an application to crop and display the individual letters separately. [Get the number plate image]

4. Read a grayscale image, find the enhanced output by applying the following filters.

$$\begin{bmatrix}0 & 0 & 0\\0 & 1 & 0\\0 & 0 & 0\end{bmatrix}, \quad \frac{1}{9}\begin{bmatrix}1 & 1 & 1\\1 & 1 & 1\\1 & 1 & 1\end{bmatrix}, \quad \begin{bmatrix}0 & 0 & 0\\1 & 0 & 0\\0 & 0 & 0\end{bmatrix}, \quad \begin{bmatrix}-1 & 0 & 1\\-2 & 0 & 2\\-1 & 0 & 1\end{bmatrix},$$

$$\left(\begin{bmatrix}0 & 0 & 0\\0 & 2 & 0\\0 & 0 & 0\end{bmatrix} - \frac{1}{9}\begin{bmatrix}1 & 1 & 1\\1 & 1 & 1\\1 & 1 & 1\end{bmatrix}\right)$$

Experiment and demonstrate the same filter with padding and for various stride size.