19CSE367 Digital Image Processing

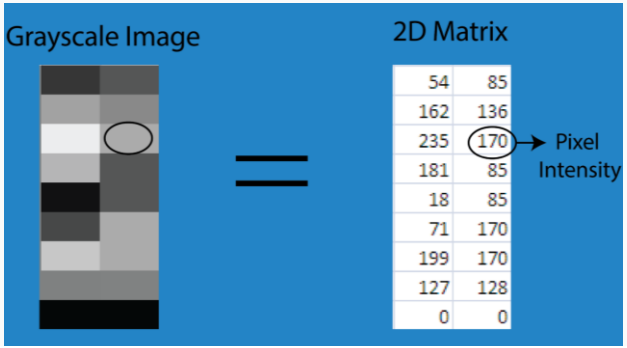
SARATH TV

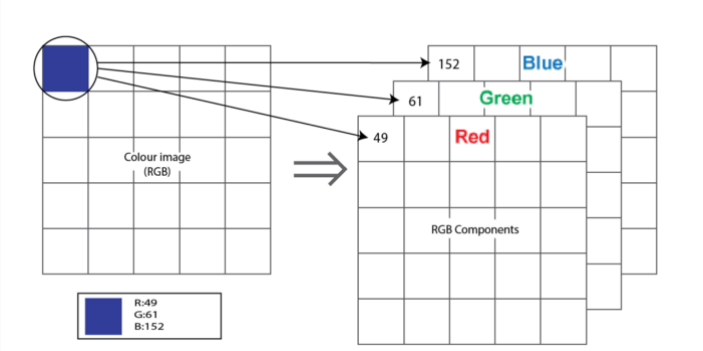
Last lecture

- Color Model
- Types of images
- Opencv and scikit image library for Image processing.

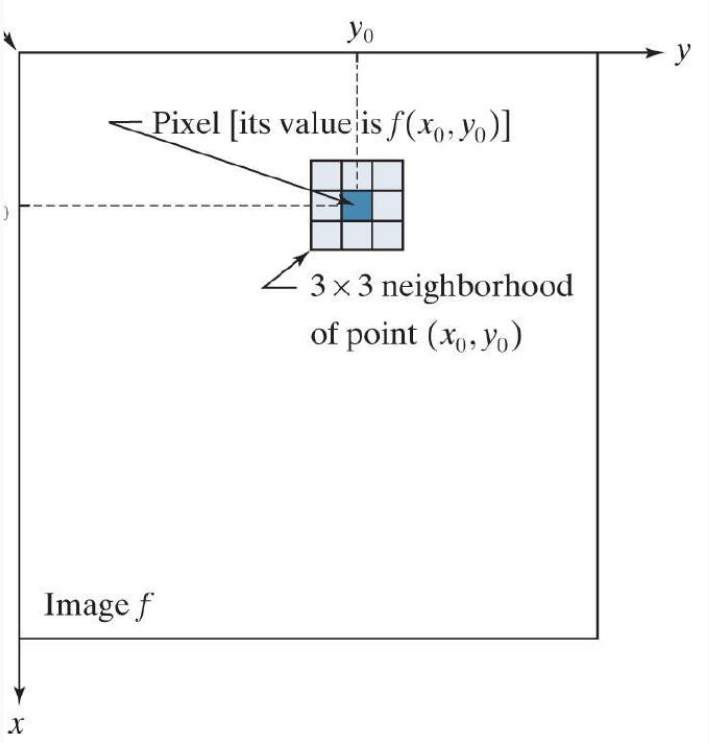
Spatial domain processing

- An image can be represented in the form of a 2D matrix where each element of the matrix represents pixel intensity. This state of 2D matrices that depict the intensity distribution of an image is called Spatial Domain.
- Direct manipulation of pixels in an image- Spatial domain processing.



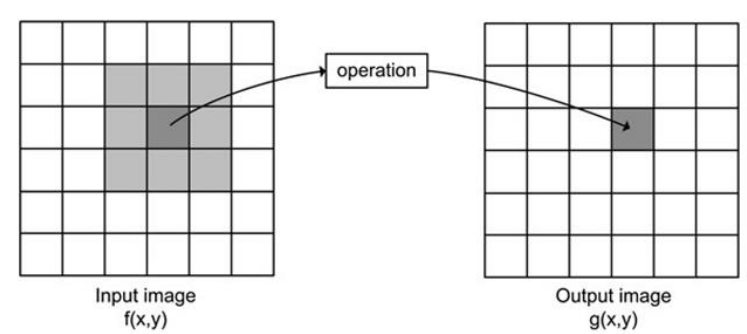


- Spatial processing – Intensity transformations and spatial filtering.
- Intensity transformations operate on single pixel of an image
- Eg Contrast manipulation and image thresholding.
- Spatial filtering –operations on the neighborhood of every pixel in a image.
- Eg image smoothing and sharpening



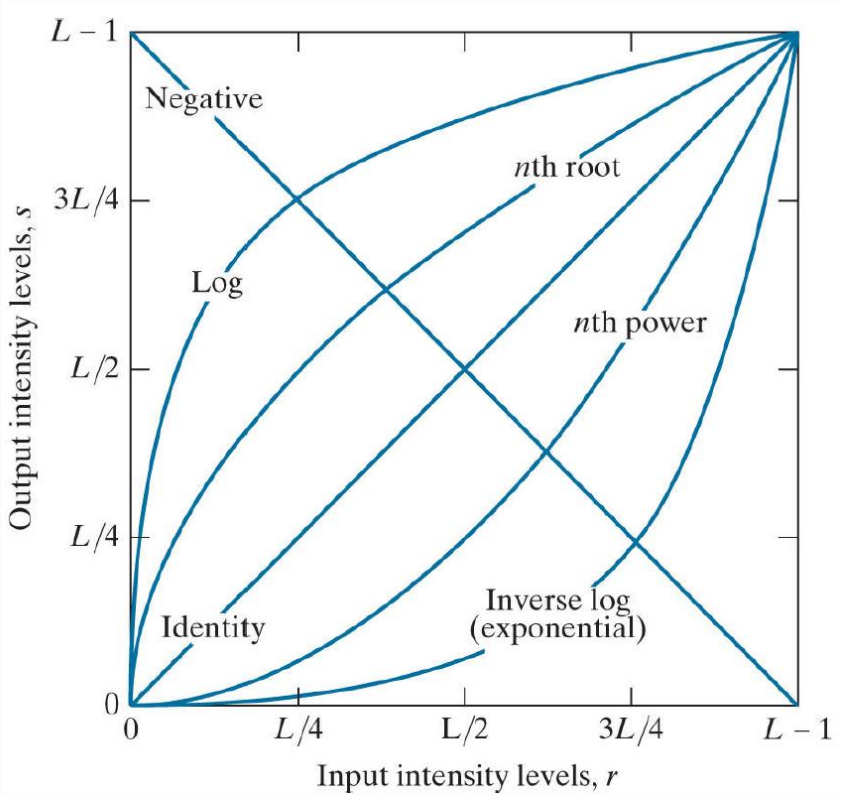
Spatial domain processes

- $g(x,y) = T[f(x,y)]$
- $f(x,y)$– input image
- $g(x,y)$ – output image
- T – operator on f
- 1x1 neighbourhood –intensity transformation- g depends on the value of f at single point (x,y).
- $s = T(r)$
- s & r - intensity of g and f at x,y



Basic intensity transformation functions

- Simplest of all image processing techniques.
- *Image negatives*
- Reversing the intensity levels of a digital image.
- Enhance white or gray detail in dark regions of an image.




THANK YOU!