19CSE367 Digital Image Processing

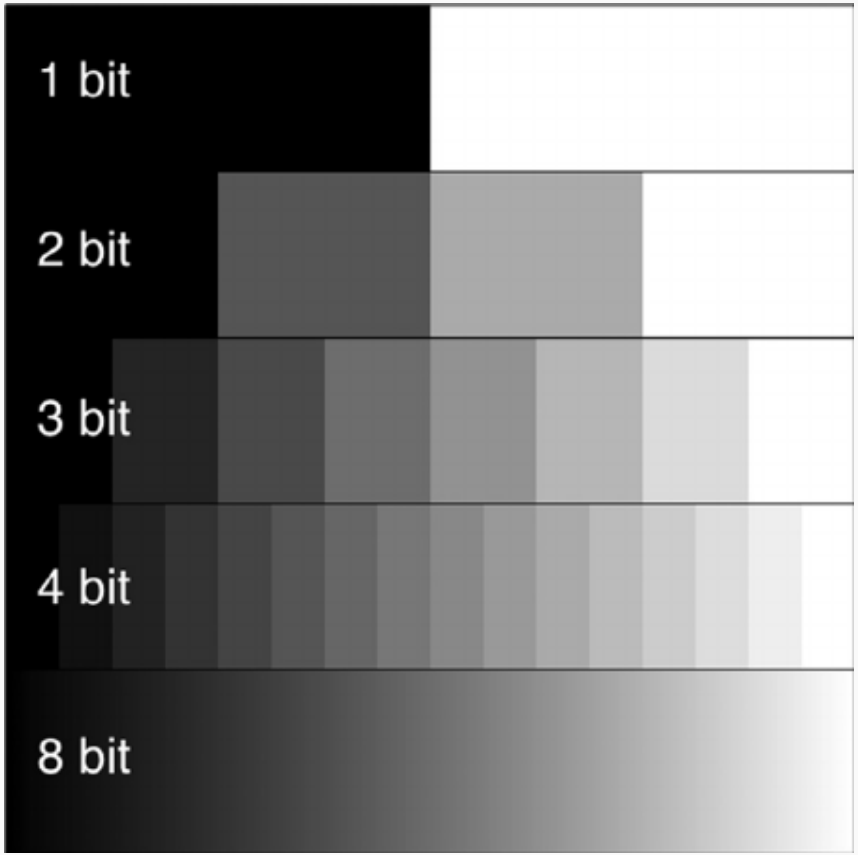
SARATH TV

Last lecture

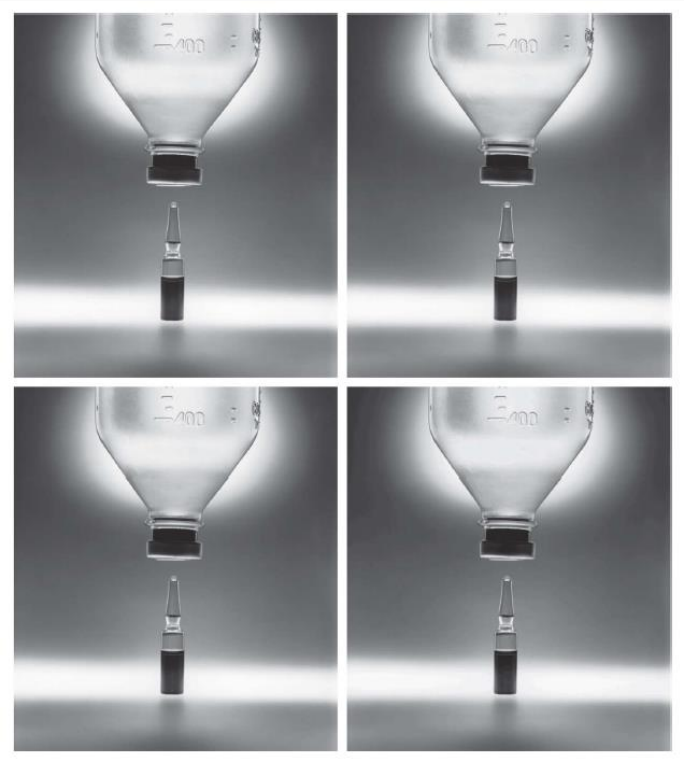
- Dynamic Range
- Image Contrast
- Spatial Resolution

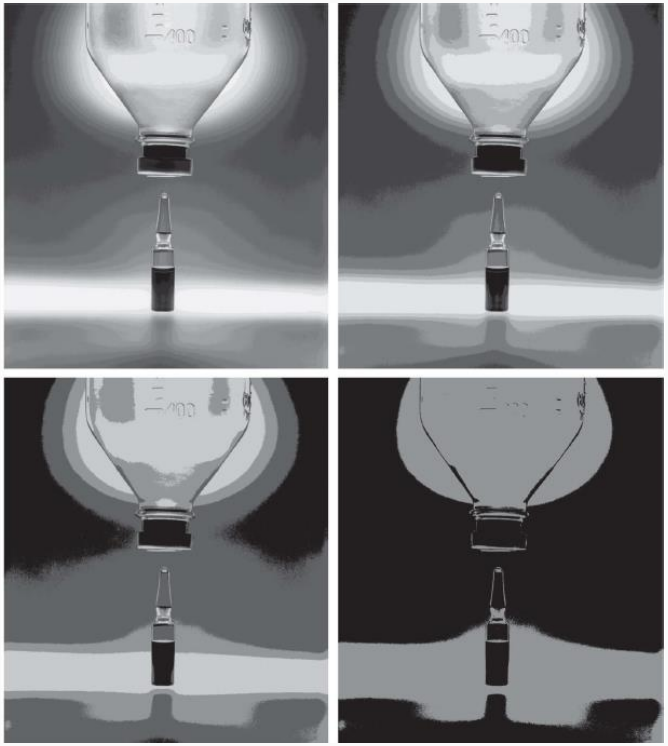
Intensity resolution

- Intensity resolution : Smallest observable change in intensity level.
- Number of bits used to quantize intensity.
- The number of intensity levels is an integer power of 2 .
- Image that is quantized into 256 levels has 8 bit intensity resolution.
- Most common no of bits is 8 bit.
- Capturing small levels of brightness : intensity resolution high.
- For a Intensity profile
- Coarse discretization ,smooth variation /transitions will not be detected properly.


1 bit
2 bit
3 bit
4 bit
8 bit

Effect of intensity resolution reduction





Quantity equals quality ??

- people think that megapixels equal quality
- on top of the quantity you should also consider the depth of the pixels, this is what determines the amount of tonal values that your image will have.
- For example, a 2-bit depth can store only black, white and two shades of grey, but the more common value is 8-bit. The values grows exponentially so for example with an 8-bit photo (2 to the power of 8 = 256) you'll have 256 tones of green, 256 tones of blue, and 256 tones of red, which means about 16 million colors.

Role of image size

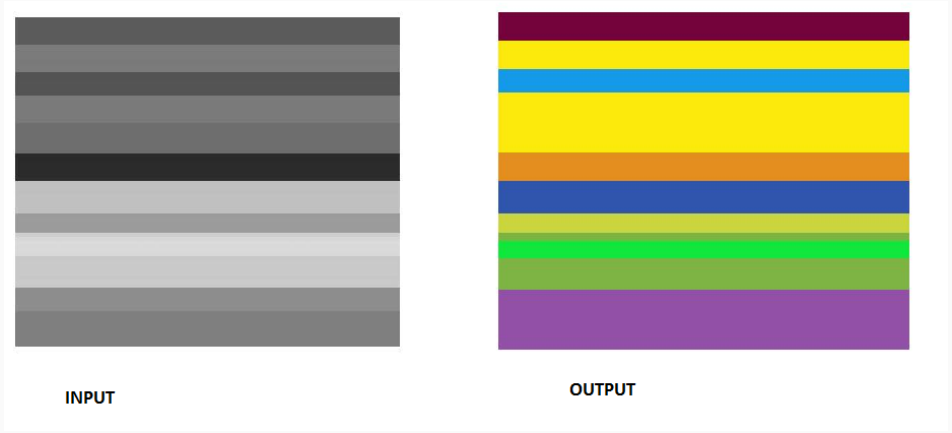
Higher resolution means a sharper image??

- True only if all images were the same size. But hardly it’s the case.
- Quality of image depends –density and image size.
- Pixels in a images –fixed.
- If we try to change physical size of image-changes number of pixels per inch. lower dpi.

Reducing number of pixels

Color image

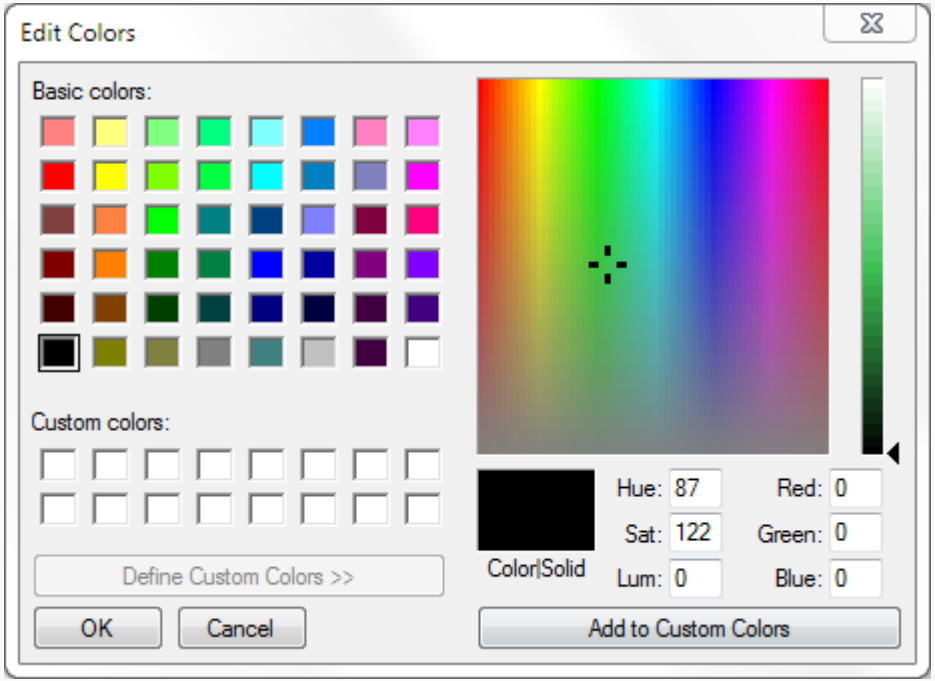
- Color – a descriptor which simplifies object identification and extraction of object from a scene.
- Humans can distinguish thousands of color shades – manual image analysis.
- Pseudo and full color processing.
- Pseudo – assign color to a particular grayscale intensity/range of intensities.
- Full color- images acquired using full color sensor- digital camera.

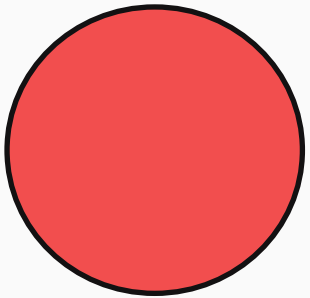


Characteristics to distinguish colors

- Brightness
- Hue
- Saturation

- Brightness- attribute that gives the perception that a source is radiating or reflecting light
- Hue –attribute associated with dominant wavelength in a mixture of light waves. Object as a color.
- Saturation –measure of amount of gray mixed with a hue.


Edit Colors
Basic colors:
Custom colors:
Define Custom Colors >>
OK
Cancel
Color|Solid
Hue: 87
Sat: 122
Lum: 0
Red: 0
Green: 0
Blue: 0
Add to Custom Colors




THANKYOU!