

A decorative graphic in the top left corner consisting of a blue square above a grid of smaller squares in various colors.

Workload

- 1 project at the end of the semester (topic and group member before 31 August)
- 1 individual paper presentation [10-15 minutes] (submit the paper title (conf.) before 31 August)



Image Fundamental

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Digital Image Representation

- An image may be defined as two-dimensional function $f(x,y)$ where x and y are spatial (plane) coordinates.
- The amplitude of f at any pair of coordinate (x,y) is called the intensity





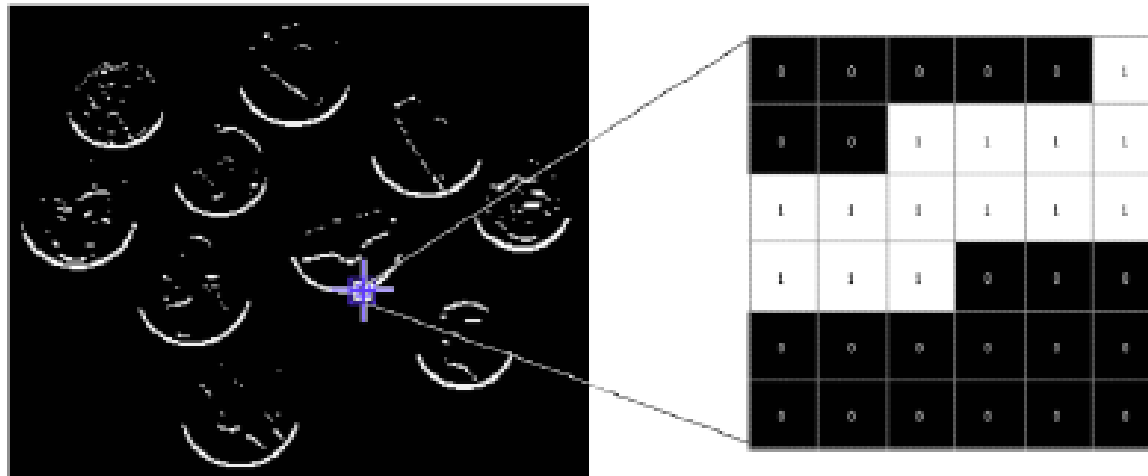
Digital Image Representation

- Binary images
- Gray level images
- Color images
- Indexed color images



Binary Images

- 2D array, one bit per pixel, a 0 usually means black and a 1 usually means white
- A binary image is represented using a logical arrays of 0s and 1s

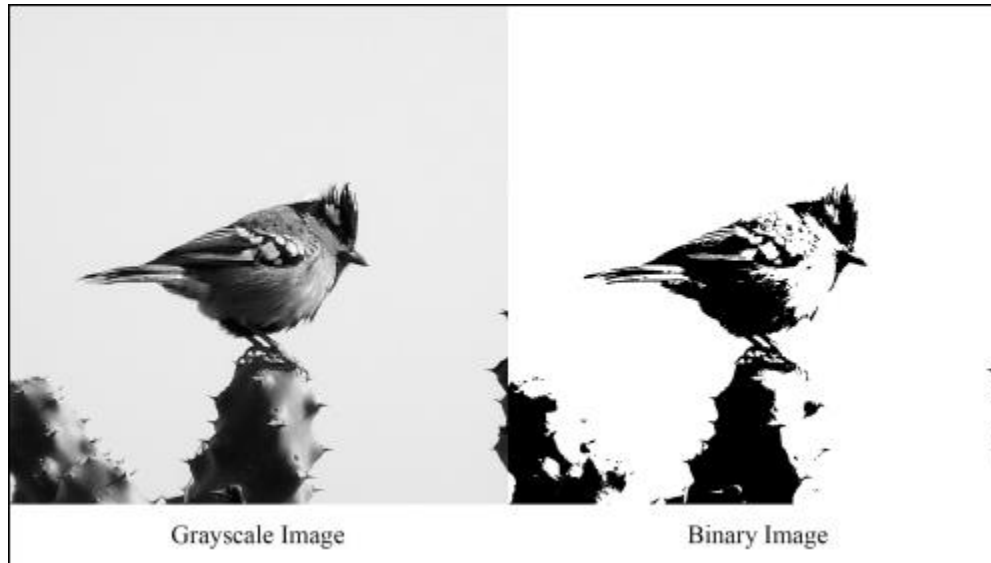


Gray-level images

- 2D array, 8 bits per pixel, a 0 usually means black and a 255 means white
- we can use uint8 or float



Grayscale vs. Binary



Color images

- Color images are formed by a combination of individual 2-D image, e.g., (red, green, blue)
- RGB representation: each pixel is represented by 24 bits number

- 24-bit (true color) RGB images



(a)



(b)



(c)

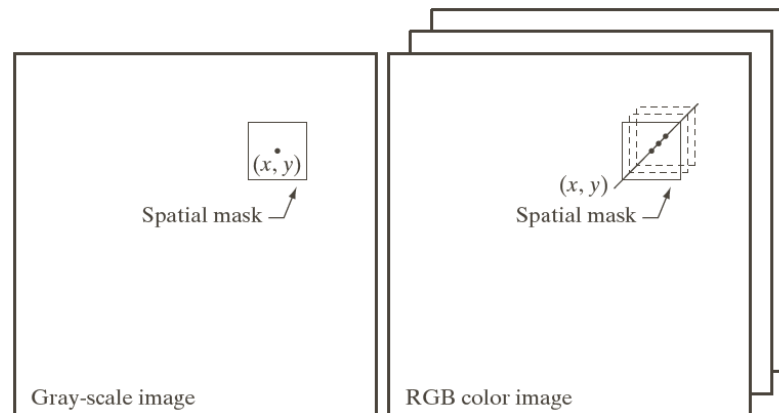


(d)



Full Color Image Processing

- Unlike gray-scale image, the processing can be performed per color channel

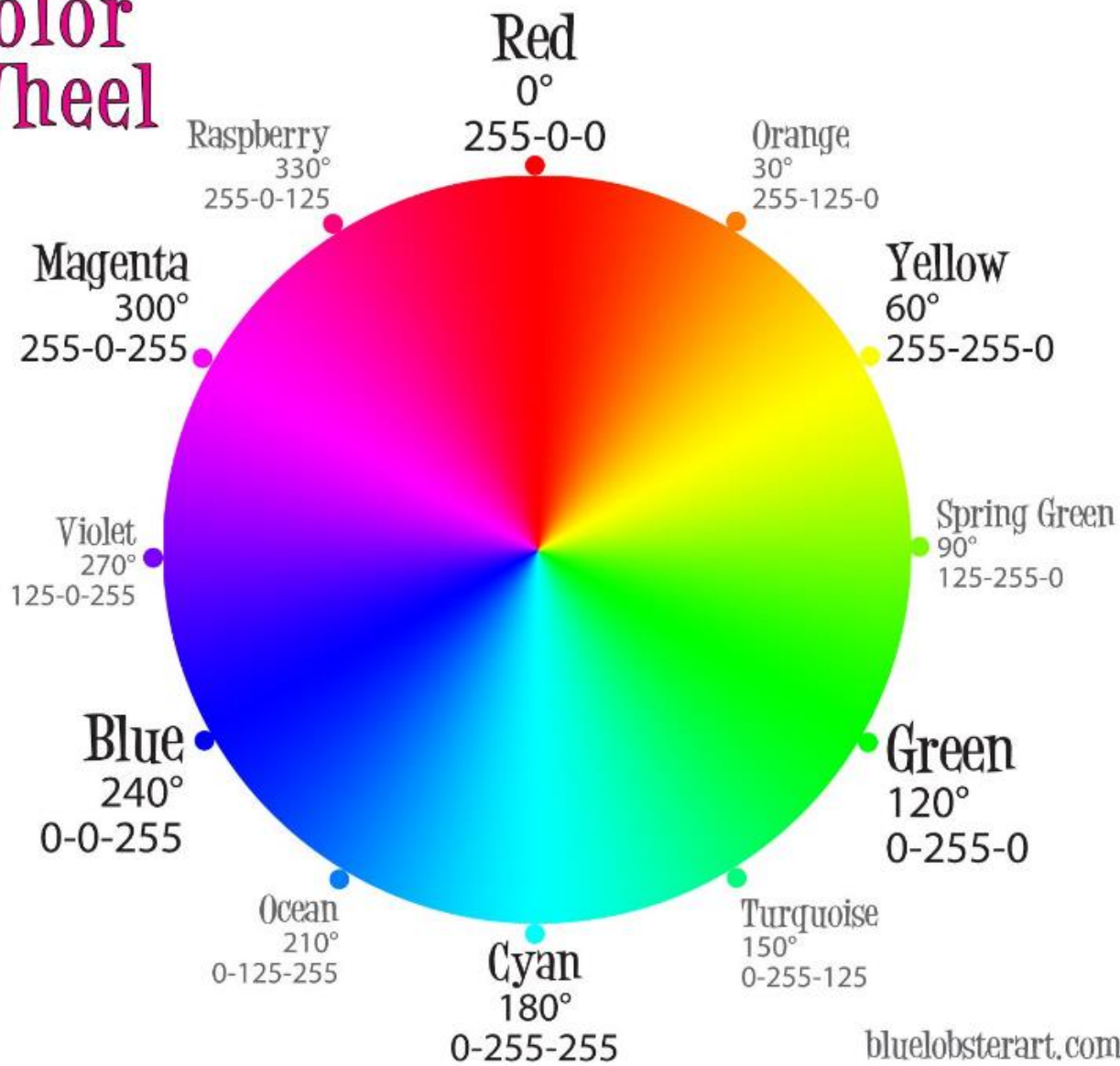


a b

FIGURE 6.29
Spatial masks for
gray-scale and
RGB color
images.



RGB Color Wheel

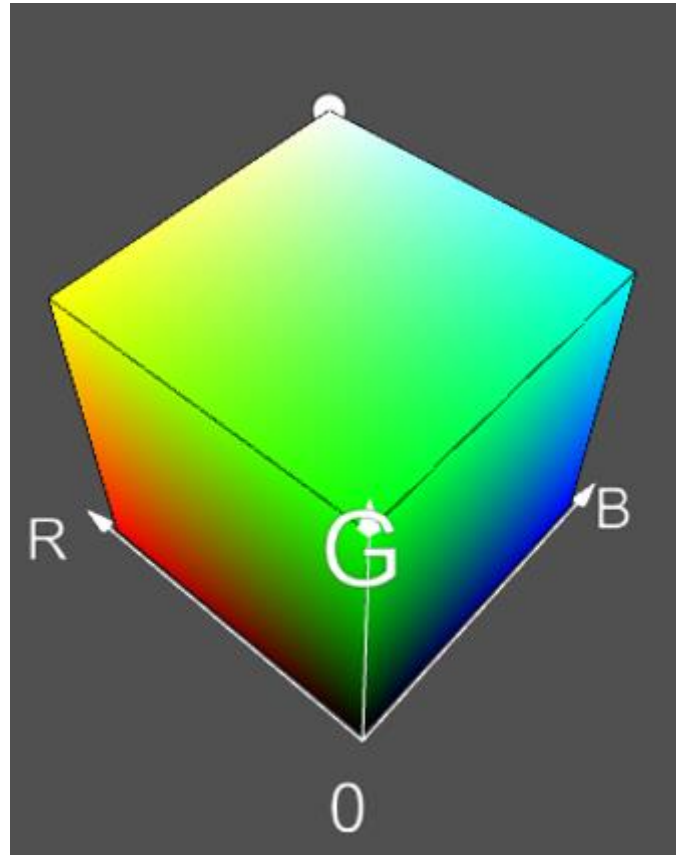


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RGB Color Space





Questions?

