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FACULTY OF EGINEERING

Digital Image Processing
LECTURE-05

Mr. Dhirendra

Assistant Professor

Computer Science & Engineering

OUTLINE

- Elements of digital image processing systems
- Color processing
- Basics of color
- MCQ
- References

Elements of digital image processing systems

The basic operations performed in a digital image processing systems include

(1) acquisition,

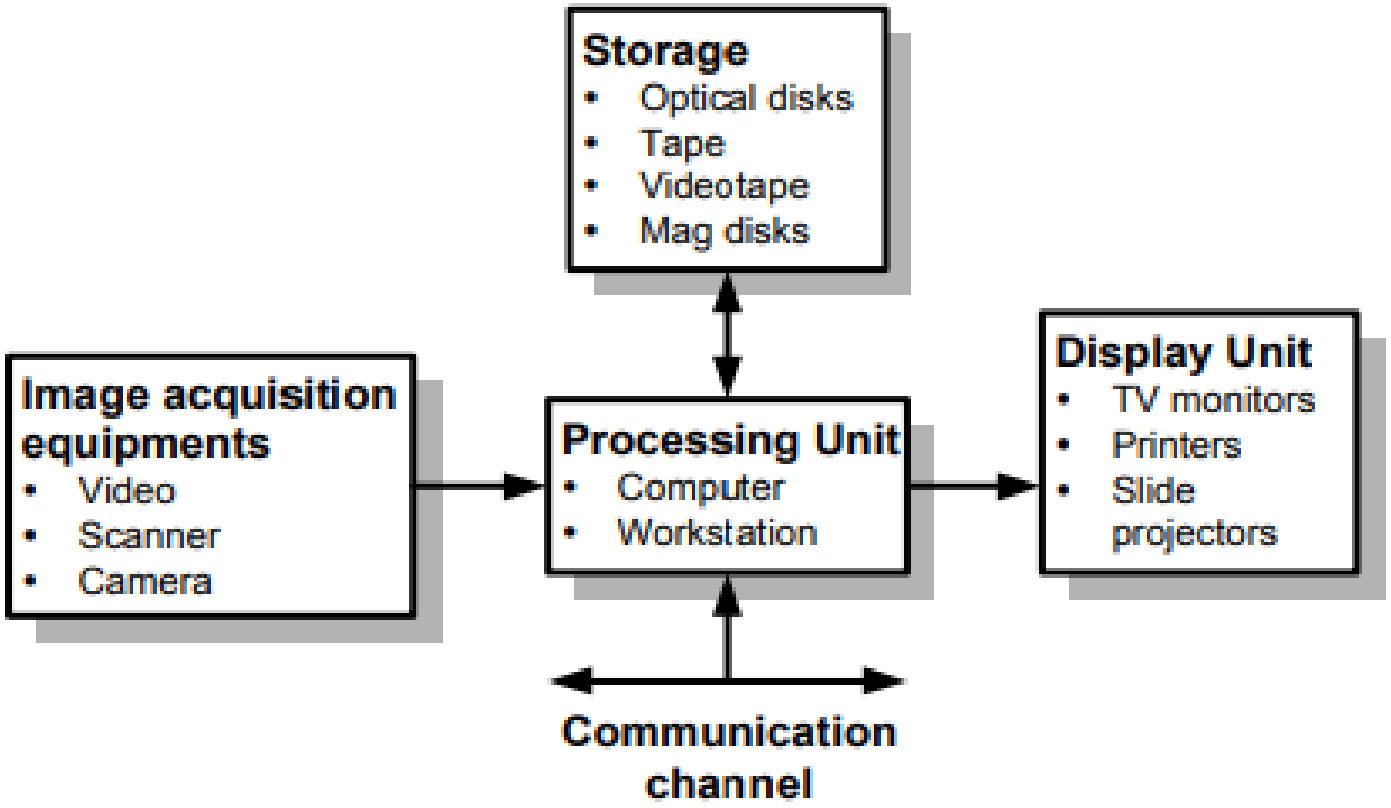
(2) storage,

(3) processing,

(4) communication and

(5) display.

Elements of digital image processing systems



Basic fundamental elements of an image processing system

Color processing

- Basics of color
- Color models in images
- Color models in video

Basics of color

(a) Light and spectra

- Color is the perceptual result of light in the visible region of the spectrum, having in the region of 400nm to 700nm, incident upon the retina.
- Visible Light is a form of electromagnetic energy consisting of a spectrum of frequencies having wavelengths range from about 400nm for violet light to about 700nm for red light.
- Most light we see is a combination of many wavelengths.

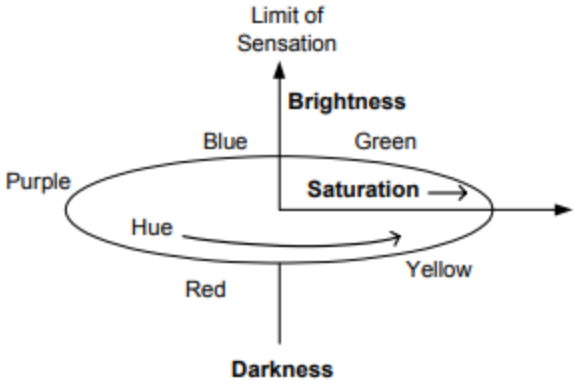
(b) Primaries

- Any color can be matched by proper proportions of three component colors called primaries.
- The most common primaries are red, blue and green.

Basics of color

The following terms are used to define color light:

1. Brightness or Luminance: This is the amount of light received by the eye regardless of color.
2. Hue: This is the predominant spectral color in the light.
3. Saturation: This indicates the spectral purity of the color in the light.



Color attributes

MCQ

1. A continuous image is digitized at _____ points.

a) Random

b) Vertex

c) Contour

d) Sampling

2.The transition between continuous values of the image function and its digital equivalent is called ___

a) Quantization

b) Sampling

c) Rasterisation

d) None of the Mentioned

3. Images quantised with insufficient brightness levels will lead to the occurrence of _____

a) Pixilation

b) Blurring

c) False Contours

d) None of the Mentioned

MCQ

1. _____ is the effect caused by the use of an insufficient number of intensity levels in smooth areas of a digital image.
   a) Gaussian smooth
   b) Contouring
   c) False Contouring
   d) Interpolation

2. The process of using known data to estimate values at unknown locations is called
   a) Acquisition
   b) Interpolation
   c) Pixelation
   d) None of the Mentioned

3. Which of the following is NOT an application of Image Multiplication?
   a) Shading Correction
   b) Masking
   c) Pixelation
   d) Region of Interest operations

MCQ

4. The procedure done on a digital image to alter the values of its individual pixels is

   a) Neighbourhood Operations

   b) Image Registration

   c) Geometric Spacial Transformation

   d) Single Pixel Operation

5. In Geometric Spacial Transformation, points whose locations are known precisely in input and reference images.

   a) Tie points

   b) Réseau points

   c) Known points

   d) Key-points

References

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