INSTITUTE OF TECHNOLOGY OF CAMBODIA

DEPARTMENT OF INFORMATION AND COMMUNICATION ENGINEERING

I5-GIC(B)

Image Processing

Discussion 01: Introduction to Image Processing

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1) How does the computer display image from the real-world image?

+ The computer display image from the real-world image in order to get image from the real world we need a sensor. looks closely at a computer screen that it is made up of millions of tiny squares. Each one of those squares is a pixel. To display an image, the computer tells the screen to show a particular color for each of the pixels.

2) What is the difference between analog and digital signal processing?

+ The different between analog and digital signal processing:

- Analog signal processing is any type of signal processing conducted on continuous analog signals by some analog means. Analog indicates something that is mathematically represented as a set of continuous values.
- Digital signal processing is the numerical manipulation of signals, usually with the intention to measure, filter, produce or compress continuous analog signals.

3) What is the difference between 4 and 8 neighborhood pixels?

+ The different between 4 and 8 neighborhood pixels:

- For the 8-neighbor configuration, the spatial distances between the central pixel and its neighbors are not all equal.
- For the 4-neighbor configuration, I took this into account by multiplying the incremental "cost" value between two pixels by the Euclidean length of their spatial separation.

4) In your opinion, among Euclidean, Block, and Chess distance algorithm which one is the best? Why?

+ In your opinion, among Euclidean, Block, and Chess distance algorithm the best of one method is Euclidean Distance Because:

- It can measure correct distance
- It takes short way

5) What is the difference between binary, grayscale, and color image?

+ The different between binary, grayscale and color image;

- Black and white images or binary images:
  - A pixel value is black or white (binary).
  - It has only 2 values: 0 and 1 (or 255).
- Grey images or grey levels images:
  - A pixel value is represented by a scalar (only size, no direction) value.
  - It has 256 values from 0 to 255.
- Color image
  - A pixel value is represented by 3 scalar values (RGB).
  - Each pixel has an intensity which consists of red value, green value, and blue value
    (e.g.: intensity=50 → R=20, G=18, B=12).
  - It has 256 values from 0 to 255.