Name: ROTHA Dapravith
ID: e20190915
Group: I5-GIC(B)

Assignment Discussion1: Introduction to Image Processing

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

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

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

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

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

Answers

1). To get image from the real-world image we need to use a sensor technology and control theory often are integrated with the processing of image data to control a robot and that real-time.

2). The different between analog and digital signal processing are:

- **Analog signal processing** is any type of signal processing conducted on continuous by some analog means. it 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). The different between 4 and 8 neighborhood pixels are:

- **4 neighborhood pixels**: take any 4 pixels that are around current pixel in 4 directions by:
  - N(x-1, y)
  - N(x+1, y)
  - N(x, y-1)

- N(x, y+1)

- **8 neighborhood pixels:** take any 8 pixels that are around current pixel in 8 conditions by:
  - N(x-1,y)
  - N(x+1,y)
  - N(x, y-1)
  - N(x, y+1)
  - N(x-2,y)
  - N(x+2,y)
  - N(x,y-2)
  - N(x,y+2)

4). In my opinion, among the Euclidean, Block, and Chess distance algorithms, I think Euclidean is the best method because it can measure the correct distance and it takes a short way to implement this algorithm.

5). The different between binary, grayscale, and color image:

- **Binary image:** has only two values for each pixel include 0 and 1 corresponding to black and white color.
- **Gray scale image:** a pixel value is represented by a scalar that only size without direction value.
- **Color image:** a pixel value represents by 3 scalar values of RGB (Red, Green, and Blue).