Dhaka International University

Image Processing

Submitted by
Mehedi Hasan Likhon
Batch 42nd - 1st Shift
Roll 39

Submitted to
Md. Riaz Uddin
Lecturer
Department of Computer Science and Engineering
Dhaka International University

Submission Date: 10 October 2020

Question 01

Define image. what are the difference between analog image, and digital Image.

Solution

Image: In computer science image means image is the combination of three Fundamental colors. RGB

① R for Red
② G for green
③ B for Blue.

Difference between analog image and digital image:

Analog image:

① Analog image processing is done on analog signals.

(2) It includes processing on two dimentional analog signals

(3) In this type of processing the images are manipulated by electrical means by varifying the electrical signal.

(4) The common example includes is the television image.

Digital Image:

(1) Digital image processing deals with digital signal

(11) the digital image processing deals with developing a digital system

(iii) Performs operations on an digital image

(iv) Digital Image processing has dominated over analog image processing with the passage of time due its side range of application.

Ques 02

Write short note on digitization, pixel, quantization.

Ans:

Digitization: digitization is the process of converting information in to digital format, in which in the information is organized into

bits. This is why it is a favored way of processing information for many organization around the world.

Pixel: pixel is the actually short for picture element. These small little dots are what make up the image on computer displays. Each pixel can only be one color at a time.

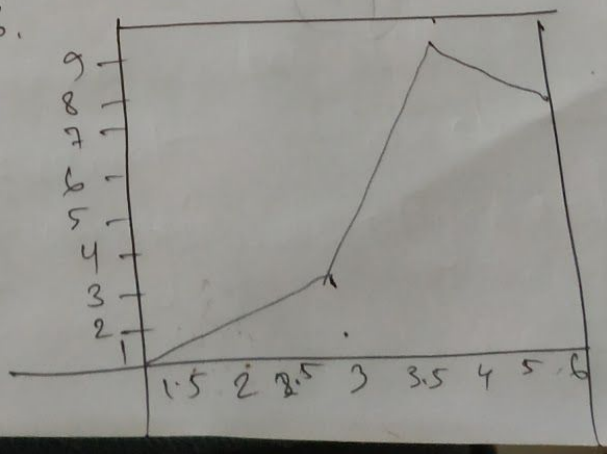
Quantization: is the process of mapping inputs values from a large set to output values in a smaller set, often with a finite number of elements. Rounding and truncation

are a typical example of quantization process.

Question - 3

write a matlab code which will take an image and show it.

Solution:

1. x=2
2. x+1
3. sin (x)
4. y= [1,2,3,9,8,7]
5. plot [y]
6. 

Workspace

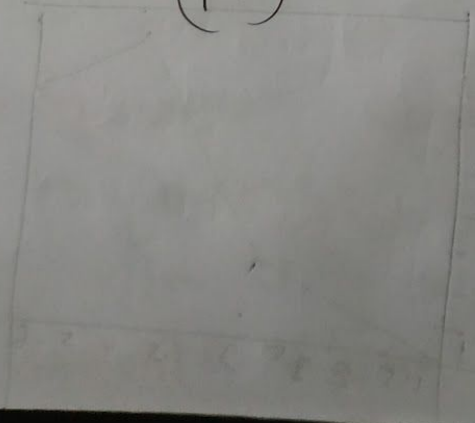
Name	Value
Ans	0.1411
X	3
Y	[1,2,3,9,8,7]

Ques 9

Draw the sequences of a typical image processing.

Solution

(pto)



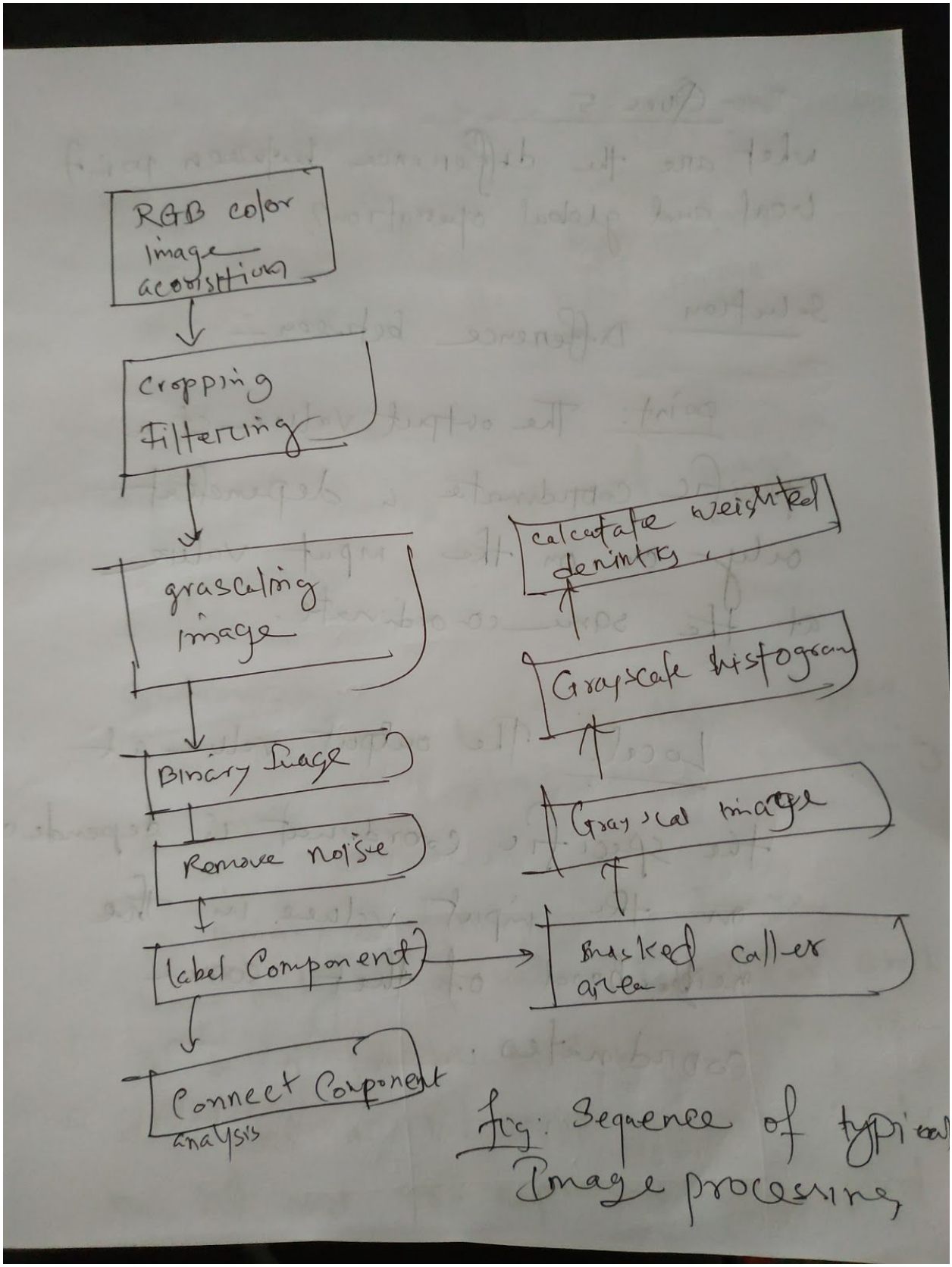


Fig: Sequence of typical Image processing

Ques-5

what are the difference between point local and global operation?

Solution

Difference between —

point: The output value at a specific coordinate is dependent only on the input value at the same coordinate.

Local: The output value at the specific coordinate is dependent on the input values in the neighborhood of that some coordinates.

Global: The output value at a specific coordinate is dependent on the values in the input image.

Ques. 6

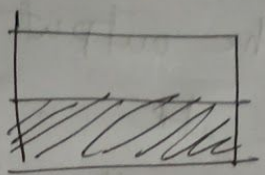
Explain different types of image representation model.

Solution:

There are basically three types of image in digital image processing

① Binary Image: Binary Image take only two values i.e. either 0 or 1. 0 for black, 1 for white. It also called as bit mapped image. Only one bit used to represent one pixel

Therefor the image take ten space.

white 1:
black 0 

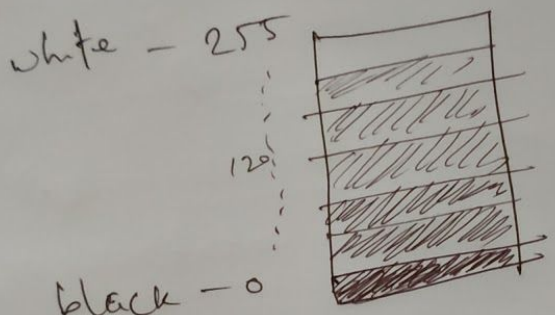
~~② Grayscale~~

② Grayscale image: Grayscale scale image contain only brightness in formation, Each pixel value in a grayscale image coores pexes to an amount or quality of each pixel in it sepested by a byte or word are pixel can be represented by 8 or 16 or 24 bit.

If 8 bit are ~~used~~ need to represent are pixel, then there are total 256 gray as $2^8 = 256$

if 16 bit then $2^{16} = 65536$
if 24 bit then $2^{24} = 16777216$

Average person can distinguish about 41 shadow of gray



③ Color image: A color image is a digital image that includes color information for each pixel. A color image is typically represented by bit depth with a 24 bit image the bit are often divided into of group image.

8 for Red, 8 for green, 8 for blue A color image has been 3 values per pixels component color spaces are RGB, HSV, CMYK.