Name: Md Modassir Imam
Roll: 17511117
Dept: Computer Science
Papex: CSEN4262

(3) The neighbour of a pixel is the collection of pixels which surround it. It is required for operations such as morphology edge ~~disec~~ detection media filter etc.

4 adjacency: two Pixel P and q with v and values from V are 4 adjacent if q is in the set N4(P).

8 adjacency: Two Pixel P and q with values from V and are 8 adjacent if q is in the set N8(P).

(2) Steps in digital image Processing:-

(a) Image Acquistion: this is the first step Image aequistion could be as simple as being given an image that is already in digital form.

(b) Image Enhancement: it Brings out detail that is obscured.

(c) Image Restoration: It tends to be based on mathematical or Probalistic modes of image degradation

(d) Color image Processing: this may include color modeling and processing in digital domain.

(e) Wavelets and Multiresolution Processing: Wavelets are the fundamental for representing images in various degree.

(f) Compression: It deals with the technique for reducing the storage required to save an image.

(g) Morphological Processing: It deals with tools for extracting image component useful in representation & description of shape.

(h) Segmentation: Partition of image into its constituent part or objects.

(i) Representation & Description: It follow up the output of segmentation stage.

(j) Object recognition: it assign label to object such as vehicle.

(k) Knowledge base: deals with region of image where information of interest is known to be located.

(i)

(A) (II)

(B) (III)

(C) (IV)

(D) (IV)

(E) (I)

(4) (A) Contrast Stretching (often called normalization) is a simple image enhancement technique that attempts to improve the contrast in an image by 'stretching' the range of intensity values it contains to span a desired range of values the full range of pixel values that the image type concerned allows. contrast Stretching changes the distribution and range of the digital numbers assigned to each pixel in an image.

(B) Grey level or Intensity level slicing: it means highlighting a specific range of intensity in an image. In other word we segment certain grey level regions from the rest of the image. suppose in an image your region of interest always take values b/w say 80 to 150. So intensity level slicing highlights this range and now instead looking at whole region one can focus on the highlighted region of interest.

(6) Euclidean distance: The straight line distance between two pixels.

eg

0	0	0
0	1	0
0	0	0

image

1.41	1	1.41
1	0	1
1.41	1	1.41

distance

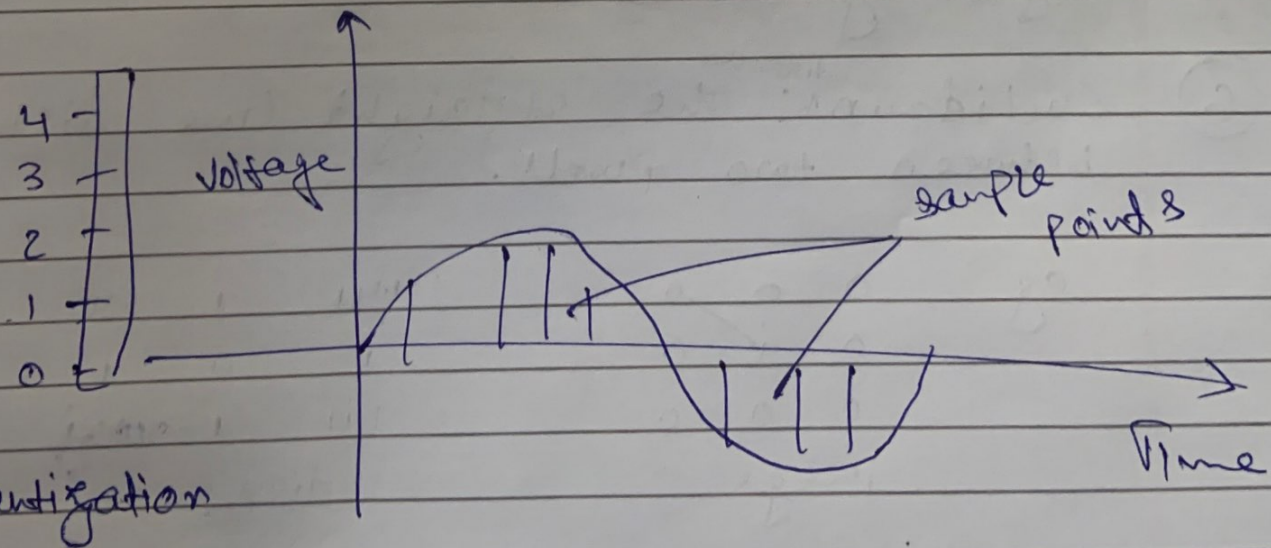
City block distance: it measures the Path between the ~~two~~ pixel based on a 4-connected neighbours Pixel whose edges touch are 1 unit apart Pixels digonally touching are 2 unit apart eg

0 0 0	2 1 2
0 1 0	1 0 1
0 0 0	2 1 2
Image	distance

Chessboard distance: it measures the Path between the Pixels based on an 8-connected neighbourhood Pixel whose edge or corner touch are 1 unit apart.

0 0 0	1 1 1
0 1 0	1 0 1
0 0 0	1 1 1
mage	distance.

(5)



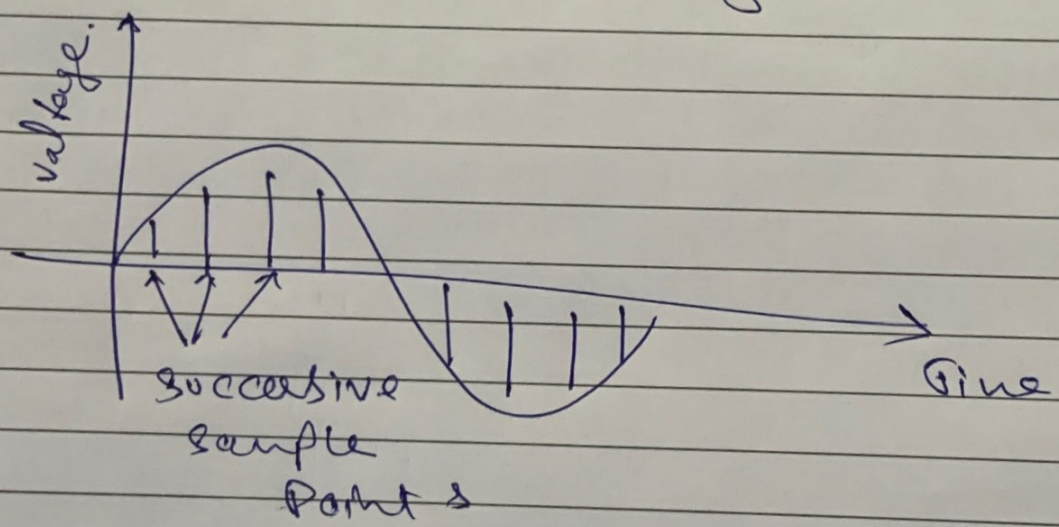
Quantization

vertically ranging values have been quantised into 5 different levels of partition.

Quantisation → digitilization of amplitude values

Sampling → digitilization of coordinate values

eg : $y = \sin x$



Total Pixels = no of rows x no of columns