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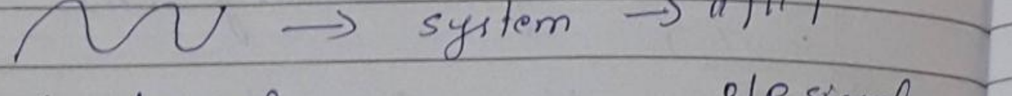
1) Sampling is the procss of converting a signal into a numeric sequence. The process is also called analog to digital conversion or simply digitizing

· Sampling rates determine the spatial resolution of digitized image.



we digitize x axis in sampling and it is done on independent variable in case of equation $y = \sin(x)$ it is done on x variable and it is divided into two parts up sampling and down sampling.

there are some random variation in the signal these variations are due to noise in sampling we reduce this noise by taking samples

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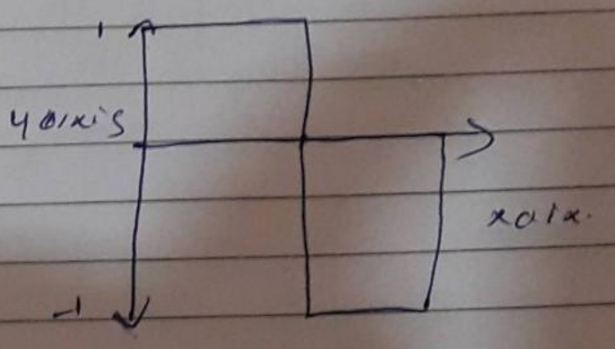
quantization

quantization is opposite to sampling it is done on y axis when you are quantizing an image you are actually dividing a signal into quanta

on the x axis of the signal are the co-ordinates values and on the y axis we have amplitude so digitizing the amplitude is known as quantization



the signal has been quantified into three different levels. that means that when we sample an image we actually sample an image gather lot of values and in quantization we set levels to these values.

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(2) Pre-Processing is an improvement of the image data that suppresses unwilling distortions or enhances some image features important for further processing although geometric transformations of images.

* Four categories of image processing method according to the size of the pixel neighborhood that is used for the calculation of a new pixel brightness.
  - pixel brightness transformation.
  - geometric transformation.

* Image processing method use the considerable in images.

* If pre processing aims to correct some degradation in the images.

* Pre processing is common name for operation with images at the lowest level of abstraction. both input and output are intensity images.

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(3) Application

* Banking:

Typical tasks include Document verification Person authentication Bankers cheque analysis.

example: ~~check~~ : cheque

image processing in processing bank cheque. The cheque is subjected to segmentation and subsequently subjected to automated cheque analysis for its understanding and hence validating the cheque

* Agriculture: In this we have seen the role of image processing for weed detection and remove and other video exhibit how image processing based system is developed to classify the fruits based on the texture properties

- For Harvesting
- For cleaning
- For quality inspection

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* Remote Sensing

Remote is the acquisition of information about an object without making physical contact with the object

How soon role of remote s for Biu Yield Estimation.

* planting
* Heading
* Ripening
* Harvest

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(1) Biometric technology can provide a means of uniquely recognizing human based upon 1 or more physical or behavioral characteristics

Biometric technogy is less exposed to damages and sudden change. The behavioral and physical element accessed for biometric qualification like iris/ retina, voice, pulse, DNA, vein, etc.

are less in danger to damage and sudden changes

* Bio metric technology is very useful for ID verification in range of government organization banks and financial institutions and high security areas.

* Authentication of person
  - Banking
  - Airport
  - Electronic voting
* Defense sectors.

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(3) Representation of an image can take many forms and of him it refers to the way that the conveyed information such as color. it's coded structural and image files

* representation of and name standard as gathered together into the discipline named content based Images indexing

+ Representation
Let the starting point pbo be the uppermost, leftmost in the image co the west neighbor of bo be examine & bneighbors of bo starting at co & proceed in clockwise direction

+ Descriptors Boundary length