1. Significance of Sampling and quantization

= in order to become suitable for digital procesing and image function $f(x, y)$ must be digitalized both spatially and in amplitude. typical a frame grabber or digitalizer is used sampler or quantized

- Sampling
- quantization.

Sampling determines the spatial resolution of digitalized image

where the quantization determines the no of grey lines in the digitalized image.

A Magnitude of sampled image is expressed as digital value in image processing. the transition between continous value of the image function and its digital equivalence

the number of quantization level should be high enough for human perception for fine shading details in the image

2. importance of preprocessing in understanding the digital image data

= pre processing involves operation on images at lowest level of abstraction where both output and input images are intensity images the important aim of preprocessing is to improve the image data that ~~distorts~~ eliminate

the distortions and enhance image feature

Image Acquisition - the ~~two~~ image acquisition is the first process. Different types of image sensors are used to acquire an image and the Capability of the image

Pre-processing: image ~~acquis~~ pre-processing involves operation on images at the lowest level of abstraction where both input and output are intensity images

Segmentation - Segmentation is one of the key process in image processing. Image segmentation is the process that subdivides an image into Constituent parts.

Representation and description - Selecting a good representation is only part of the solution of transforming

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⑤ Image representation

the representation of image can take many form it refers to way that the information that Colour is Coded digitaly and image is stored in structured image file. Several open or patent Standards are proposed to Create manipulate store and exchange digital images the file that discribes the format of image in the algorithm of image endocoding. such as Compression as well as the format of addition information ofte refard as meta data

(4) Importance of Biometrics in current application.

= Biometrics is used to extract the hidden information in an obligated image using suitable pre-processing techniques.

Banking - it is used to recognize the signature of the person.

Airport - to recognize person's identification

Electronic voting - to recognize the person voter ID.

Defense sectors - to determine threats of enemy.

Secured transaction - used for online transaction.

Biometrics is mostly used to extract hidden information

(3) image analysis and understanding in an useful task for better society.

= there are many application of image processing in day to day life. which are given below.

① banking
② Remote sensing
③ Surveliance and Security
④ Agriculture

① banking

Document Verification
Remote Sensing
Traffic Management.

Remote Sensing

the remote sensing predict and collect the information of any object without making physical contact.

Agriculture

the role of image processing that used to detection and removal and to classify fruits based on texture properties

Traffic management

To avoid accident care by altering the Vehicle in curvy roads. Managing traffic signals.