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1. Discuss the significance of sampling and quantization in processing of DI? (4).
2. Discuss the importance of image pre-processing (4)
3. Justify' image analysis and understanding as an useful task for better society building? (4)
4. Importance of biometric technology. (4)
5. image representation.

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1. Sampling and ~~Quan~~ Quantisation is process involved when converting a analogue video signal to digital image. i.e. A digitizer is used to sample and quantize the analogue video signal. Hence, in order to create digital image. we need to convert continues data onto digital form.

The sampling rate govern the spatial resolution while quantisation fixes no. of gray level in the digitized image.

" The conversion of ~~dis~~ continuos value of image function and its digital equivalent called Quantization"

ex: say $f(x,y)$ is the value at given pixel point in order to process image, a $f(x,y)$ must be digitized both spatially and amptitude. this is done by sampling & Quantisation.

2. Image Pre-processing is a ~~one~~ one of fundamental step on digital image processing. Pre-processing involve operations on images at lowest level of abstraction; where both input and output image are "intensity image". Preprocessing comes after image acquisition. The main aim of pre-processing is to

- elimination of distortions
- Scaling
- Noise cancelation.
- Enhancement of image feature.

These help in~~to~~ improve the features of image.

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3. Image analysis and understanding is an useful task for better society building"

There are many application of image processing in day to day life. which is given below :-

i. Banking.
ii. Remote Sensing.
iii. Surveillance and Security.
iv. Traffic management.

i. Banking:

- Document verification
- Banker choque analysis.
- Person authentication.

ii. Remote Sensing:

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

- weather prediction.
- Agriculture.

iii. Security & Survillance:

Survillance camera are used to monitor the surroundings by automated computer instead of human, to minimise crimes, and to monitor what is going on in the place.

iv. Trafic managment:

To avoid accidental case by alerting the vehicle in curvy roads. Managing trafic through signal.

4. Image play a very important role to identify the individual in biometrics. It gives useful information about the individual. Faces, fingerprint irises etc are the image based biometrics. which require image processing. Using suitable pre-processing technique it is possible to extract hidden information in image. which is commonly used in crime investigation.

- We can detect fingerprint on knife, door soon so that it is easy to identify the crime victim
- We can reduce noise introduced in image at the time of acquiring sample.

Application of biometric technology is in crime investigation, Banking, Airport so on..

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5. Image Representation :

Representation and discription is the one of fundamental steps in ~~image~~ digital image processing. Representation & description almost follow the output of segmentation stage, which usually is raw pixel data. which constituting either the boundary of region or all points in region.

Choosing Representation is part of Solution for transforming raw data into a form, which is suitable for computer processing. where as description deals with extracting features.
