DIP - Exam
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1. ~~DIS~~ Sampling and quantization is the main ~~process~~ in procedure in processing digital Image.
We define image as a 2 dimensional intensity function $f(x,y)$, where x and y are the co-ordinals representing horizontally and vertically. In order to process images, an image function $f(x,y)$ must be digitized both spatially and in amplitude.
In order to create digital image we have to convert image into digital form, these process involves sampling and quantization

The sampling rate increase the spatial ~~sol~~ resolution of the image, and quantization level fixes the number of grey levels in digitized image. In image processing magnitude of sampled image is expressed in a digital value. The change over b/w continous values of the image function and its digital equivalent is called quntization. The quatization level should be high for human perception

Sampling and quantization done both in analog and digital image.

2. Digital image is a representation of 2 dimensional image as a finite set of digital values, called pixels. An image is texual information. Computer cant understand the human vision. So it to image is convert into digital form. ~~to~~ understand to computer understand.

The aim of pre-processing to eliminate distractions in image or enhance some image feature suitable for further processing. Pre-processing involve eliminate the noises in image for better understanding of information in that image. Pre-processing involves operations on image at the lowest level abstraction where both input and output image is intensity image.

After acquisition of the image next step is pre-processing. Pre-processing used to find the error or any noises hold in the image and clear that image for further processing. Clearness of distortion means increase or decrease the

brightness of the image, convert black and white image into color, or color image to black and white like that. Before segmentation a image should be preprocessed for better processing.

3. Digital image processing involves image understanding and analysis, and computer vision which are aim to imitate the procers of human vision electronically. Digital image processing involves the steps image acquisition, pre-processing, segmentation, representation and description, and recognition and Interpretation thereby enabling the scene analysis and understanding.

Analysing the image is first step for further processing. Analysing the problem is important than understanding the problem for clear the problem and get a solution.

Understanding the problem and find out the solution is important. Digital Image processing involves in various fields such as physics, Robotics, computer Science, Mathematics, Artificial Intelligence and many more.

Analysing the problem in the image is important. such as find out the noises in the image. For human understanding it is impatant to clear the noise in the image.

Image acquisition, preprocessing, segmentation, Representation and description, and recognition and interpretenton is the main step to for digital image processing.

Digital Image Analysis is when a computer or electrical device automatically studies an image to obtain useful information from it. It involves the field of medical imaging, machine vision, signal processing. There are many different techniques used in automatically analysing images. 2D and 3D object recognition, image segmentation

~~Viode~~ video tracking, optical flow. etc are the methods for analyse the image

4. Biometric technology is one of the application of digital image processing. Faces, fingerprints, irises etc. are the image based biometrics. There biometric sysst analysis is most important in current world. Because each all everyone have there only biometrics. In banking, Aripal, electronic voting, defense sectors, secured transactions we use biometric technology.

Biometric image is used to extract information in a obliterated image. ~~or~~ ~~ract~~ ~~to~~ preprocessing technology is used to extract the hidden information in an image. This technology commonly used in Forensic application. In the time of crime investigation police force uses these technology. They checking wheather there is any finger print found in the of the criminal.

In biometrics, image processing is required for identifying an individual whose biometric image is already in the database. Now a days biometric technology is more popular than any other. Because by biometric technology we can identify the person and we can reduce the crime.

In feature extraction we use biometric technology in domain-specific features such as face, PIPs, fingerprints etc.

DNA-Matching, Eyes-Iris Regognition, Face recognition, finger Geometry recognition, voice recognition are the types of biometrics. Biometrics are a way to measure a persons physical characterstics.

5. Image Representation.

A digital image is an image composed of pixture elements or pixels. ~~each~~ they are represented by its intensity or gray level that is an output from its 2 dimensional functions fed on input by its spatial coordinates. etc

Selecting a good representation is only part of the solution of transforming the image data into a suitable form. This is used for further processing. Feature extraction is also part of representing the image. Feature extraction technique are used to extract the feature of image. Feature ~~are~~ such as its size, shape, composition, location etc.

Representing the image is most important for further processing. Recognition is the process that assign a label to an object based on its features. Knowledge is important to represents the image

~~Image~~ Represented image is used for further processing. Representing and describing is important.