Stages in DIP

Following are stages in digital image processing:

1. Problem Domain

2. Image Acquisition

3. Image Enhancement

4. Image Restoration

5. Morphological Processing

6. Segmentation

7. Object Detection

8. Representation/ Description

1. Problem Domain:

The first stage in digital image processing is to know about the problem that we want to study. First of all one must be clear about the problem that he wants to investigate. The nature of the problem should be well known to us.

2. Image Acquisition:

This is the input stage of digital image processing. In this stage we capture the image in digital form.

3.Image Enhancement:

In this step of digital image processing we make an image look better in a subjective way. It highlights the interesting patterns in an image. This stage also removes the noise from an image. It provides the visually appealing effect which makes an image smoother to the human eye.

- The pixel of an image provides us with two information about an image.

    1. Location(X)

    2. Colour (Y)

- Colours provide the two types of informations:

    1. RGB

    2. Gray Scale

Sampling:

In image processing sampling means to convert the value of a real image to a digital image.

Quantization:

The process in which we convert the colors of an image to the digital image is called the quantization.

Transformations

Transformations sharpen, modify and enhance the image.

Following are the types of the transformations in digital image processing:

1. Linear Transformation:

The type of the transformation in which the relationship is linear is called the linear transformation. The general equation used for this transformation is:

S= T(r)

The graphical presentation of linear transformation is like:
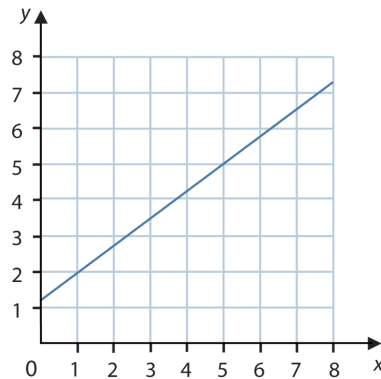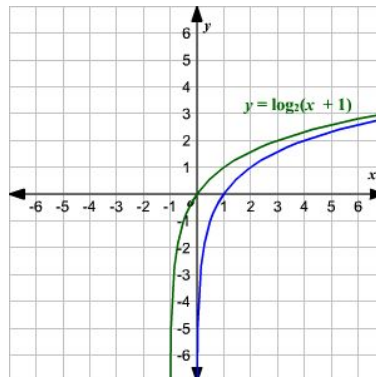

2. Logarithmic Transformation:

To get the improved results of an image we apply the logarithmic transformation on an image. The general expression for this transformation is:

S= c*log(1+r)

The graphical presentation of this transformation is:

3. Power Root Transformation:

This type of transformation is the mixture of linear and logarithmic transformations. The general expression for this transformation is:

$$S = c \ast r^2$$

The graphical presentation of this transformation is: