

# Image Processing

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## ABSTRACT-

Image processing is a method to convert an image into digital form and perform some operations on it, in order to get an enhanced image or to extract some useful information from it. It is a type of signal dispensation in which input is image, like video frame or photograph and output may be image or characteristics associated with that image. Usually **Image Processing** system includes treating images as two dimensional signals while applying already set signal processing methods to them.

It is among rapidly growing technologies today, with its applications in various aspects of a business. Image Processing forms core research area within engineering and computer science disciplines too.

## BASICS OF IMAGE PROCESSING-

Image processing basically includes the following three steps.

Importing the image with optical scanner or by digital photography.

Analyzing and manipulating the image which includes data compression and image enhancement and spotting patterns that are not to human eyes like satellite photographs. Output is the last stage in which result can be altered image or report that is based on image analysis.

Image processing usually refers to digital image processing, but optical and analog image processing also are possible. This article is about general techniques that apply to all of them. The *acquisition* of images (producing the input image in the first place) is referred to as imaging.

## PURPOSE OF IMAGE PROCESSING-

The purpose of image processing is divided into 5 groups. They are:

1. Visualization - Observe the objects that are not visible.

2. Image sharpening and restoration - To create a better image.

3. Image retrieval - Seek for the image of interest.

4. Measurement of pattern – Measures various objects in an image.

5. Image Recognition – Distinguish the objects in an image.



# TYPES -

The two types of methods used for Image Processing are Analog and Digital Image Processing. Analog or visual techniques of image processing can be used for the hard copies like printouts and photographs. Image analysts use various fundamentals of interpretation while using these visual techniques. The image processing is not just confined to area that has to be studied but on knowledge of analyst. Association is another important tool in image processing through visual techniques. So analysts apply a combination of personal knowledge and collateral data to image processing.

Digital Processing techniques help in manipulation of the digital images by using computers. As raw data from imaging sensors from satellite platform contains deficiencies. To get over such flaws and to get originality of information, it has to undergo various phases of processing.

## ANALOG PHOTOGRAPHY-

It is the use of computer algorithms to perform image processing on digital images. As a subcategory or field of digital signal processing, digital image processing has many advantages over analog image processing. It allows a much wider range of algorithms to be applied to the input data and can avoid problems such as the build-up of noise and signal distortion during processing. Since images are defined over two dimensions (perhaps more) digital image processing may be modeled in the form of multidimensional systems.

Digital cameras provide real instant photography. Within a second or two of the exposure, you can see the captured image on the built-in LCD screen (or even before the exposure with the Live View mode of cameras like the EOS-1D Mark III). You can decide there and then whether you want to keep or erase the image. You can also use histogram displays to determine if the exposure is correct. If not, it may be possible reshoot the to subject. Images are captured as digital files and stored on removable media cards. Unlike film, the cards are reusable. Once the files have been transferred elsewhere, you can erase the images from the card and reuse it again. This cuts out all the film and film processing costs. The three general phases that all types of data have to undergo while using digital technique are Pre- processing, enhancement and It has become fairly common to describe film photography as 'analog', to differentiate it from digital photography. In the sense being used here, analog refers to a signal where the output is proportional to the input. A light meter is a good example of an analog instrument.

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Light falling on a photocell generates an electrical current which moves a needle across a scale. The brighter the light, the the movement. greater On this basis, the sensor in a digital camera is also analog. Each of the many millions of pixels which make up the sensor is a lightsensitive photocell which generates a tiny electrical current in response to light. The brighter the light, the stronger the current. Digital only comes into play when the brightness levels are coded into the binary system (the language of computers) to create file.

To avoid the confusion of analog and digital, the French use the word 'argentic' to describe non-digital photography. Argentic means silver and is used because of the silver halide crystals that make up the film emulsion.

#### **DIGITAL PHOTOGRAPHY-**

Digital Processing techniques help in manipulation of the digital images by using computers. As raw data from imaging sensors from satellite platform contains deficiencies. To get over such flaws and to get originality of information, it has to undergo various phases of processing.

Digital image processing display, information extraction.

#### SUMMARY-

Image processing is a method to convert an image into digital form and perform some operations on it, in order to get an enhanced image or to extract some useful information from it. It is a type of signal dispensation in which input is image, like video frame or photograph and output may be image or characteristics associated with that image. Usually image processing system includes treating images as two dimensional signals while applying already set signal processing methods to them.

## References

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