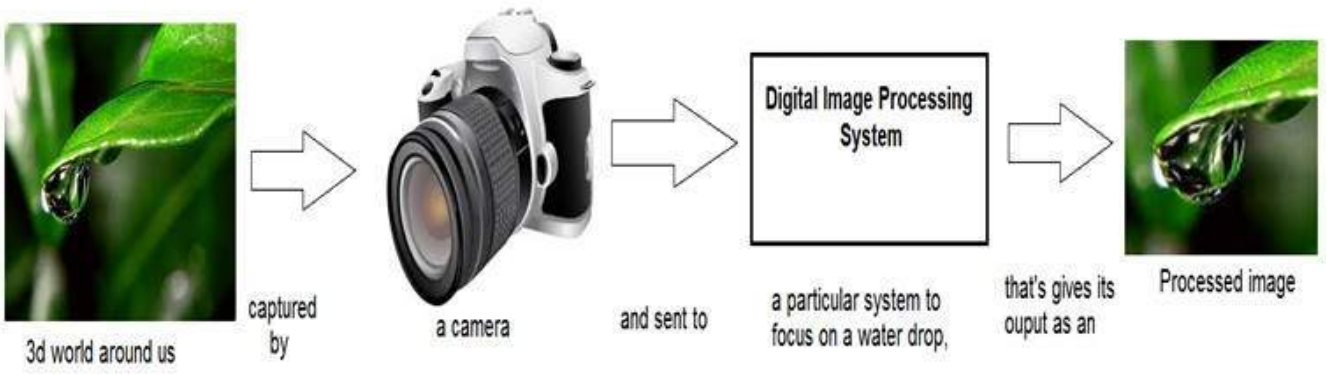
DIGITAL IMAGE PROCESSING

Digital image processing deals with manipulation of digital images through a digital computer. It is a subfield of signals and systems but focus particularly on images. DIP focuses on developing a computer system that is able to perform processing on an image. The input of that system is a digital image and the system process that image using efficient algorithms, and gives an image as an output. The most common example is Adobe Photoshop. It is one of the widely used application for processing digital images.

How it works.



In the above figure, an image has been captured by a camera and has been sent to a digital system to remove all the other details, and just focus on the water drop by zooming it in such a way that the quality of the image remains the same.

AUDIENCE

This tutorial gives you the knowledge of widely used methods and procedures for interpreting digital images for image enhancement and restoration and performing operations on images such as *blurring, zooming, sharpening, edgedetection, e. t. c.* It also focuses on the understanding of how the human vision works. How do human eye visualize so many things , and how do brain interpret those images? The tutorial also covers some of the important concepts of signals and systems such as *Sampling, Quantization, Convolution, Frequencydomainanalysise. t. c.*

PREREQUISITES

Signals and systems

Since DIP is a subfield of signals and systems , so it would be good if you already have some knowledge about signals and systems , but it is not necessary. But you must have some basic concepts of digital electronics.

Calculus and probability

Basic understanding of calculus , probability and differential equations is also required for better understanding.

Basic programming skills

Other than this, it requires some of the basic programming skills on any of the popular languages such as C++, Java, or MATLAB.