SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

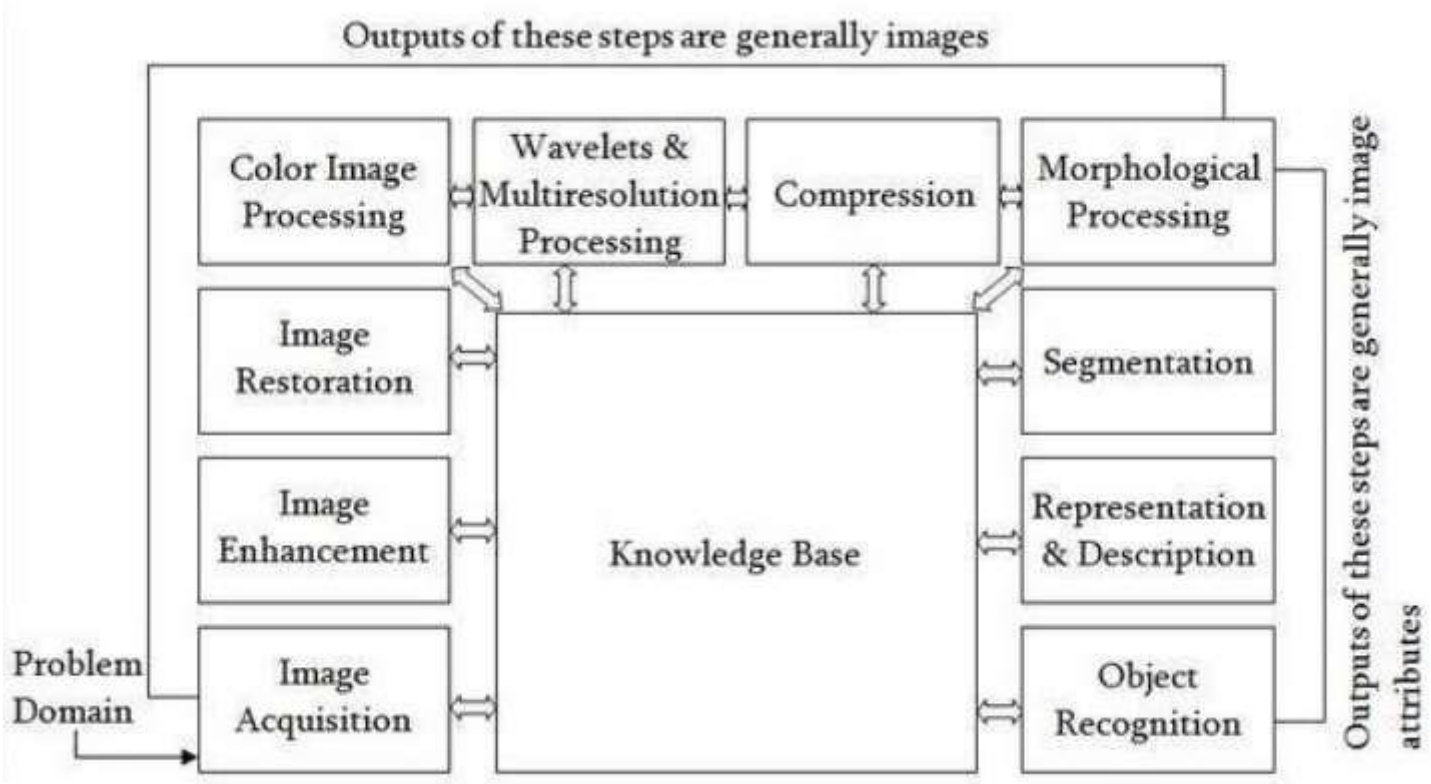
COURSE NAME : 19EC513 – IMAGE PROCESSING AND COMPUTER VISION

III YEAR / V SEMESTER

Unit I- DIGITAL IMAGE FUNDAMENTALS AND TRANSFORMS

Topic : Fundamental steps and Components in digital image processing

FUNDAMENTAL STEPS IN DIGITAL IMAGE PROCESSING:

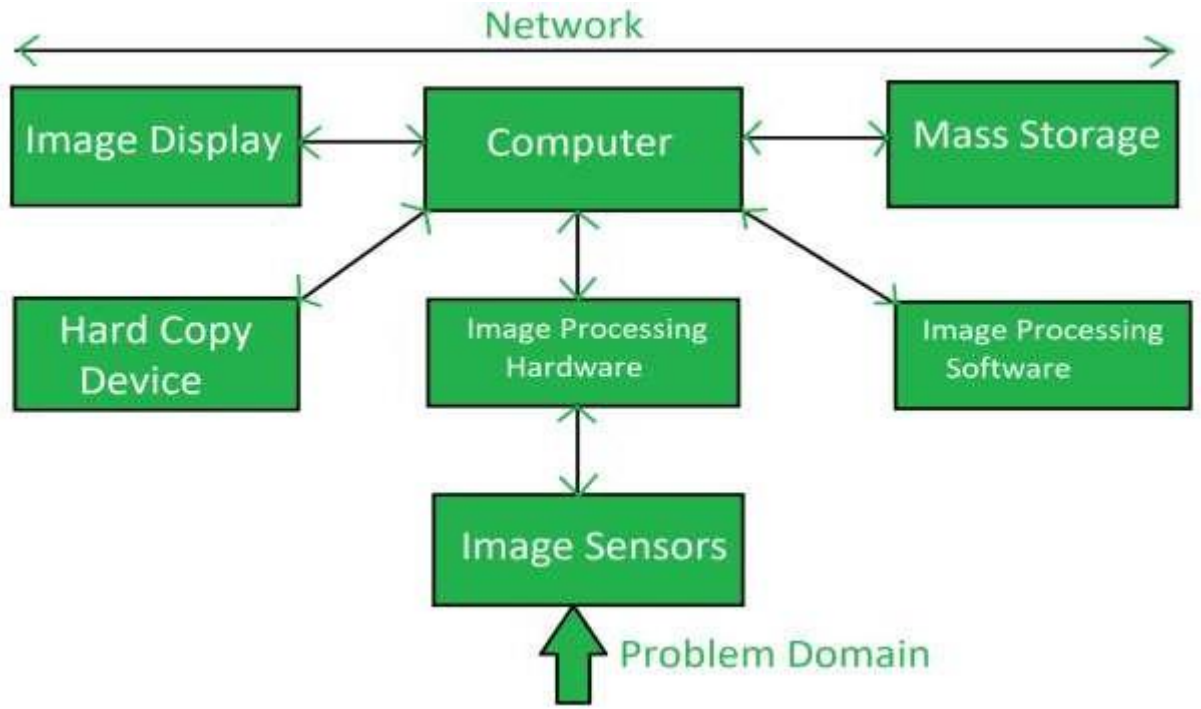


The basic steps involved in digital image processing are:

1. **Image acquisition**: Capturing an image using a digital camera or scanner, or importing an existing image into a computer.
2. **Image enhancement**: Improving the visual quality of an image, such as increasing contrast, reducing noise, and removing artifacts.
3. **Image restoration**: Removing degradation from an image, such as blurring, noise, and distortion.
4. **Color image processing :** An area that has been gaining in importance because of the significant increase in the use of digital images over the Internet.
5. **Wavelets** are the foundation for representing images in various degrees of resolution. In particular, this material is used in this book for image data compression and for pyramidal representation, in which images are subdivided successively into smaller regions.
6. **Compression**, as the name implies, deals with techniques for reducing the storage required to save an image, or the bandwidth required to transmit it.
7. **Image segmentation**: Dividing an image into regions or segments, each of which corresponds to a specific object or feature in the image.
8. **Image representation and description**: Representing an image in a way that can be analyzed and manipulated by a computer, and describing the features of an image in a compact and meaningful way.
9. **Recognition** is the process that assigns a label (e.g., “vehicle”) to an object based on its descriptors. digital image processing with the development of methods for recognition of individual objects.

Components of Image Processing System

Image Processing System is the combination of the different elements involved in the digital image processing. Digital image processing uses different computer algorithms to perform image processing on the digital images.
It consists of following components:-



- **Image Sensors:** Image sensors senses the intensity, amplitude, co-ordinates and other features of the images and passes the result to the image processing hardware. It includes the problem domain.
- **Image Processing Hardware:** Image processing hardware is the dedicated hardware that is used to process the instructions obtained from the image sensors. It passes the result to general purpose computer.
- **Image Processing Software:**

Image processing software is the software that includes all the mechanisms and algorithms that are used in image processing system.

- **Mass Storage:** Mass storage stores the pixels of the images during the processing.
- **Computer:** Computer used in the image processing system is the general purpose computer that is used by us in our daily life.
- **Hard Copy Device:** Once the image is processed then it is stored in the hard copy device. It can be a pen drive or any external ROM device.
- **Image Display:** It includes the monitor or display screen that displays the processed images.
- **Network:** Network is the connection of all the above elements of the image processing system.

Any Query????

Thank you……