

Advanced Digital Image Processing

Chapter 1: Introduction

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Outline

- 1 Basics of Digital Image Processing
 - Terminology
 - Levels of Digital Image Processing



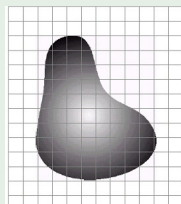
Image

Definition

_____ is a two-dimensional function $f(x, y)$,
where

- x and y are **spatial** coordiantes.
- **Amplitude** of $f(\cdot, \cdot)$ at any pair of coordinates (x, y) is called the _____ or _____ of that image at that point.

Example



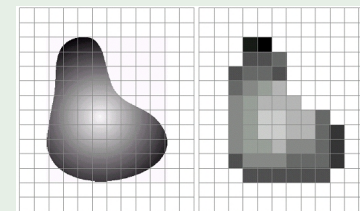
Digital Image

Definition

_____ is an image with **finite**, **discrete** quantities of $x, y, f(x, y)$,
where

- (x, y) : _____, _____, picture elements, image elements

Example



Digital Image Processing

Definition

_____ is to process digital images by means of
digital computers.

Example

Photoshop, DSP chips



Three Levels

- _____ : image \rightarrow image
 - Contrast enhancement
 - Image sharpening
 - Noise reduction
- _____ : image \rightarrow attribute
 - Segmentation
 - Classification/recognition
 - Edge, contour extraction
- _____ : computer vision
 - Making sense of an ensemble of recognized objects.
 - Image analysis
 - Cognitive functions associated with vision



Fundamental Steps in DIP

