## Chapter 1. Introduction

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## 1 What Is Digital Image Processing?

An image may be defined as a two-dimensional function, f(x,y), where x and y are spatial (plane) coordinates, and the amplitude of f at any pair of coordinates (x,y) is called the *intensity* or gray level of the image at that point.

When x, y, and the intensity values of f are all finite, discrete quantities, the image is called a *digital image*. A digital image is composed of a finite number of elements, each of which has a particular location and value, called *picture elements*, *image elements*, *pels*, and *pixels* 

## 2 Fundamental Steps in Digital Image Processing

Outputs of these processes generally are images Outputs of these processes generally are image attributes CHAPTER 6 Wavelets and Color image Morphological Compression multiresolution processing processing processing CHAPTER 5 CHAPTER 10 Image Segmentation restoration CHAPTER 11 CHAPTERS 3 & 4 Knowledge base Representation Image filtering and & description enhancement CHAPTER 2 CHAPTER 12 Image Object Problem ⇒ acquisition recognition domain

## 3 Components of an Image Processing System

