

Digital Image Processing

CHAP. 00

Overview

Image ?

□ 영상은

- 의사소통의 주요 수단
- 인식, 판단의 주요 대상 *object Detection*
- 저장, 기록, 통신의 주요 대상
 - 음성, 언어, 문서의 역할을 대체

□ 영상처리 (image processing)

- 원하는 영상을 얻기 위하여 원영상에 취하는 일련의 연산 (series of operations)

Objectives of image processing

1. Enhancement of image quality for human interpretation

- ▣ To improve pictorial information *↳ 화질 개선*
- ▣ 잡음이나 훼손으로부터 원래의 영상을 복원하거나 영상을 강조 또는 열화시키는 과정
- ▣ Eg. Image restoration of space probe

2. Preprocessing for machine perception

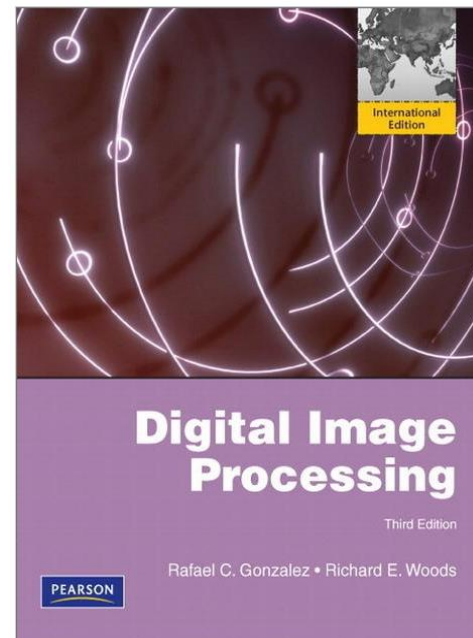
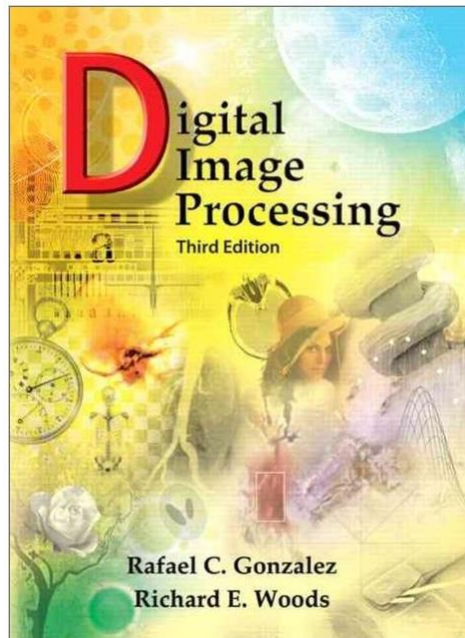
- ▣ To extract an image information in a form suitable for computer processing
- ▣ 화상을 대상으로 인식이나 판단의 근거가 되는 특징이나 원소를 찾는 과정 *"primitive"*
- ▣ Eg. Feature extraction for recognition

Topics

- Image enhancement
- Image restoration
- Image compression
- Image geometry
- Image reconstruction
- Image segmentation
- Feature extraction
- Shape analysis
- Motion analysis
- Image representation and description
- Etc.

Text

- Text
 - ▣ Digital Image Processing, 3rd Ed.
 - R. Gonzalez and R. Woods
 - Prentice-Hall, Pearson



Contents

- Chap. 1 Introduction
- Chap. 2 Digital Image Fundamentals
- Chap. 3 Intensity Transformations and Spatial Filtering
- Chap. 4 Filtering in the Frequency Domain
- Chap. 5 Image Restoration and Reconstruction
- Chap. 6 Color Image Processing
- Chap. 7 Wavelet Multiresolution Processing
- Chap. 8 Image Compression
- Chap. 9 Morphological Image Processing
- Chap. 10 Image Segmentation
- Chap. 11 Representation and Description
- Chap. 12 Object Recognition

References

□ References

▣ Digital Image Processing using MATLAB

■ R. Gonzalez, R. Woods and S. Eddins

▣ Digital Image Processing

■ W. K. Pratt, John Wiley and Sons

▣ Image Processing, Analysis, and Machine Vision

■ M. Sonka, V. Hlavac, R. Boyle, PWS Publishing

Related Journals

- IEEE (institute of electrical and electronics engineers)
 - ▣ Trans. on Image Processing
 - ▣ Trans. on Pattern Analysis and Machine Intelligence
 - ▣ Trans. on System, Man and Cybernetics
- SPIE (international society for optical engineering)
 - ▣ Optical Engineering
- Elsevier
 - ▣ Artificial Intelligence
 - ▣ Pattern Recognition
- Academic Press
 - ▣ Computer Vision and Image Understanding (former CVGIP)

Related major conferences

- IEEE ICIP
 - ▣ International Conference on Image Processing
- IEEE ICSP, former ICASSP
 - ▣ International Conference on Signal Processing
- IEEE CVPR
 - ▣ Computer Vision and Pattern Recognition
- SPIE VCIP
 - ▣ Visual Communication and Image Processing
- 영상처리 및 이해에 관한 워크숍
 - ▣ Image Processing and Image Understanding