Image Analysis — From Theory to Applications

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About the Book
Image analysis is a scientific discipline providing theoretical foundations and methods for solving problems that appear in various areas of human practice, as diverse as medicine, robotics, defense, and security. The review process of the chapters in this volume was quite rigorous, as each chapter underwent three to four double-blind reviews. The selection criteria included: relevance to the topics, correctness, originality, clarity, presentation quality, and overall score received. As a result, high-quality chapters are included in this volume.

Topics Covered

- Object Detection
  - Windowpane Detection Based on Maximum A Posteriori Probability Labeling
  - Finding Optimal Non-Overlapping Subset of Extracted Image Objects
  - Extraction of Handwritten and Signature Regions from Binary Printed Documents
  - A Robust Extension of the Mean Shift Algorithm
  - Electronic Multimedia Dictionary with Direct-Access Printed Interface

- From Theory to Applications
  - Recognizability of Iso-Picture Languages by Wang Systems
  - Computing Surfaces via pq-Permutations
  - Variational Method on Discrete Ricci Flow
  - A Linear Time Connected Component Labeling Algorithm in Quadtrees
  - Neighborhood Sequences in the Diamond Grid
  - Three Dimensional Objects in Four Dimensional Digital Spaces
  - 3-Dimensional Rectangular Array Acceptors and Learning
  - Distributitional Characteristics of Random Convex Sets
  - A Generic Feature Subset Selection Model for Large Feature Set Problems
  - Design and Implementation of High Speed Arithmetic Coder Architecture of JPEG2000 on Reconfigurable FPGA

- Motion Detection
  - Motion Analysis Using Dynamic Texture in Crowded Environment
  - Producing Stylized Renderings Using the AVP Rendering Tool
  - Extracting Semantic Video Object Using Morphology
  - Watershed Algorithm
  - Complex Motion Separation and Recognition Using Directional Motion Templates

- Medical Applications
  - Brain CT Image Feature Extraction Using Nonnegative Tensor Factorization
  - A Theoretical Solution to Partial Volume MAP-EM Tissue Mixture Segmentation for CT/MRI Imaging Modalities
  - Iris Recognition based on Genetic Algorithms and Multi-Class Gaussian Mixture Model
  - Optimal Features Selection and Classification for Iris Recognition
  - Driver's Drowsiness Detection System for IvvI Vehicle
  - Volumetric Object Reconstruction Using Generalized Voxel Coloring

Readership: Researchers, engineers, programmers in computer vision, image processing and computer graphics.

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