

Preface

The integration of artificial intelligence and computer vision technologies has become a topic of increasing interest for both researchers and developers from academic fields and industries worldwide. It is foreseeable that artificial intelligence will be the main approach of the next generation of computer vision research. The explosive number of artificial intelligence algorithms and increasing computational power of computers have significantly extended the number of potential applications for computer vision. It has also brought new challenges to the vision community. The aim of this book is to provide a platform to share up-to-date scientific achievements in this field. The papers were chosen based on review scores submitted by the members of the program committee and underwent further rigorous rounds of review.

In [Computer Vision for Ocean Observing](#), Huimin Lu, Yujie Li and Seiichi Serikawa present the application of computer vision technologies for ocean observing. This chapter also analyzes the recent trends of ocean exploration approaches.

In [Fault Diagnosis and Classification of Mine Motor Based on RS and SVM](#), Xianmin Ma, Xing Zhang and Zhanshe Yang propose a fault diagnosis method for the mine hoist machine fault diversity and redundancy of fault data based on rough sets and support vector machine.

In [Particle Swarm Optimization Based Image Enhancement of Visual Cryptography Shares](#), Mary Shanthi Rani M. and Germine Mary G. propose a particle swarm optimization based image enhancement of visual cryptography shares. The proposed algorithm guarantees highly safe, secure, quick and quality transmission of secret image with no mathematical operation needed to reveal the secret.

In [Fast Level Set Algorithm for Extraction and Evaluation of Weld Defects in Radiographic Images](#), Boutiche Y. proposes a fast level set algorithm for extraction and evaluation of weld defects in radiographic images. The segmentation is assured using a powerful implicit active contour implemented via fast algorithm. The curve is represented implicitly via binary level set function. Weld defect features are computed from the segmentation result.

In [Efficient Combination of Color, Texture and Shape Descriptor, Using SLIC Segmentation for Image Retrieval](#), N. Chifa, A. Badri, Y. Ruichek, A. Sahel and K. Safi present a novel method of extraction and combination descriptor to represent image. First we extract a descriptor shape (HOG) from entire image, and second we apply the proposed method for segmentation, and then we extract the color and texture descriptor from each segment.

In [DEPO: Detecting Events of Public Opinion in Microblog](#), Guozhong Dong, Wu Yang and Wei Wang propose DEPO, a system for detecting events of public opinion in microblog. In DEPO, abnormal messages detection algorithm is used to detect abnormal messages in the real-time microblog message stream. Combined with events of public opinion (EPO) features, each abnormal message can be formalized as EPO features using microblog-oriented keywords extraction method.

In [Hybrid Cuckoo Search Based Evolutionary Vector Quantization for Image Compression](#), Karri Chhiranjeervi and Uma Ranjan Jena propose a hybrid cuckoo search (HCS) algorithm that optimizes the LBG codebook with less convergence time by taking McCulloch's algorithm based levy flight distribution function and variant of searching parameters.

In [Edge and Fuzzy Transform Based Image Compression Algorithm: edgeFuzzy](#), Deepak Gambhir and Navin Rajpal propose an edge-based image compression algorithm in fuzzy transform (F-transform) domain. Input image blocks are classified either as low-intensity blocks, medium-intensity blocks or high-intensity blocks depending on the edge image obtained using the Canny edge detection algorithm. Based on the intensity values, these blocks are compressed using F-transform. Huffman coding is then performed on compressed blocks to achieve reduced bit rate.

In [Real-Time Implementation of Human Action Recognition System Based on Motion Analysis](#), Kamal Sehairi, Cherrad Benbouchama, Kobzili El Houari, and Chouireb Fatima propose a pixel streams-based FPGA implementation of a real-time system that can detect and recognize human activity using Handel-C.

In [Cross-Modal Learning with Images, Texts and Their Semantics](#), Xing Xu proposes a novel model for cross-modal retrieval problem. The results well demonstrate the effectiveness and reasonableness of the proposed method.

In [Light Field Vision for Artificial Intelligence](#), Yichao Xu and Miu-ling Lam review the recent process in light field vision. The newly developed light field vision technique shows a big advantage over conventional computer vision techniques.

It is our sincere hope that this volume provides stimulation and inspiration, and that it will be used as a foundation for works to come.

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