

PROCEEDINGS OF SPIE

Optoelectronic Imaging and Multimedia Technology

Toru Yoshizawa
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Tsutomu Shimura
Editors

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Introduction

Recent progress in imaging technology has brought dramatic development in academic and industrial fields, and a large number of practical applications have been reported. In addition to rapid advancement of personal computers, device technology for sensors and industrial cameras such as CCD cameras is achieving this rapid development, and compact systems suitable for practical applications have been realized. Furthermore intelligent/smart cameras and high-resolution and high-speed cameras are also easily available. At the same time, fundamental principles and algorithms for image processing have been developed. In consequence, many trials such as machine vision systems based on stereo-photogrammetry or triangulation method are popular in industrial metrology and inspection, for example, for object detection and recognition and for dimensional measurement. In addition to visible light imaging, multi-spectral imaging using infrared beam or UV light becomes useful for environmental application and security for aerial survey. For medical and biomedical applications, various topics are also found in imaging for nursing care and welfare and in diagnostic imaging by ultrasonics, PET, MRI, X-ray CT, and OCT. Needless to say, imaging techniques for manufacturing are very popular, and optical information storage and digital hologram are hopefully promising for the near future practical applications.

Regarding multimedia technology, recent progress in computing and communications has made digital imagery as well as other modalities such as audio, video, and other sensory data prevalent. In consequence, it has led to the creation of large-scale databases of multimedia and/or multi-modal data in general. Such data and databases require effective methods and paradigms to browse, share, and search for audio-visual content. They are finding ready applications in a wide range of fields such as advertising and marketing, education and training, entertainment, medicine, surveillance, wearable computing, biometrics, and remote sensing. Because of the very nature of multimedia data, new and innovative methods are called for in modeling, processing, organizing, and indexing of this data for efficient management, access, and delivery of the content and so forth.

The aim of this conference is in bringing together the researchers who are developing such methods and the users who are defining the needs for such methods. Topics of interest include all aspects of optoelectronic imaging and processing technology in the related fields. This conference consists of eight oral sessions (and a one-day poster session): Camera and Devices for Imaging; Imaging and Processing Techniques; Imaging for Measurement and Inspection; Algorithm and Data Processing in Imaging; Machine Vision and Ranging by Imaging; Imaging for Detection and Tracking; Imaging Systems and Applications; Spectrometric Techniques in Imaging.

We, conference chairs, express our appreciation to authors of contributed papers and are grateful especially for Prof. Ya Zhou (Secretary, Beijing Institute of Technology) and Prof. Hao Zhang (Tianjin University) who chaired the sessions together with us.

Toru Yoshizawa
Ping Wei
Jesse Zheng
Tsutomu Shimura