

# I-TP07

## Computer Vision and Image Processing 2

13:00-15:00  
Room : C207

Chair : Ohyama Shinji (Tokyo Institute of Technology )  
Co-Chair : Hong Keum Shik (Pusan National Univ.)

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13:00 – 13:20

I-TP07-1

### Three-dimensional Reconstruction of Textile Structure Using Discrete Cross Sectional Images to Analyze Fabric Weave Structure

Toshihiro SHINOHARA, Jun-ya TAKAYAMA, Shinji OHYAMA,  
Akira KOBAYASHI (Tokyo Institute of Technology)

The aim of our study is to automatically analyze how textile is woven which has complicated structure, such as textile with multi-layer structure. For this purpose, we propose a method to reconstruct a textile structure of a textile is visualized. Then, the anteroposterior sections of the same yarn on the cross sectional images is associated each other by superimposing them. Therefore, by this method, 3-D information of each yarn is obtained and the 3-D shape of each yarn is independently expressed. In this research, a 3-D reconstruction of a plain weave fabric is performed.

13:20 – 13:40

I-TP07-2

### A Vision System for Detecting Paint Faults on Painted Slates

T. Carew, O. Ghita and P. F. Whelan  
(Dublin City University)

This paper is concerned with the problem of how to detect paint type defects on painted slates using machine vision. We begin by outlining the motivations for this research and present a review of research in related areas before proceeding with a process description and a categorization of typical paint defects. We describe the test bed built to replicate factory conditions and the testing of image capture techniques. We discuss problems we confronted such as getting a sufficiently strong signal level from the slate, the effects of the slate surface profile on image capture and how we dealt with these problems. The third principal challenge was to generate a strong signal to noise ratio for each defect type so that a computationally inexpensive image processing method becomes viable. We demonstrate ...

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13:40 – 14:00

I-TP07-3

### Development of Highly Accurate Inspection System for Cylindrical Aluminum Casts with Microscopic Defects

S.Okada, M.Imade, H.Miyauchi (National Institute of Advanced  
Industrial Science and Technology),  
M.Idani(Japan System Design Co.)

Developed is an optical auto-inspection system to detect some microscopic defects on the inside surface of the hydraulic automobile brakes at the production line. A small cylindrical detection module with a solid laser source at its center has two rings of optical fibers to separately collect light reflected and scattered from the defects on the surface. The cylindrical brake part rotates with respect to the detection module that will move parallel to the rotational axis of the cylinder. Thus, the optical module can scan the whole inside surface area. The automatic detection of the defects is to compare the intensity distributions...

14:00 – 14:20

I-TP07-4

### Coordinates Matching in the Image Detection System For the Road Traffic Data Analysis

Jinman Kim, Hiesik Kim  
(Seoul National Univ.)

Image detection system for road traffic data analysis is a real-time detection system using image processing techniques to get the real-time traffic information which is used for traffic control and analysis. One of the most important functions in this system is to match the coordinates of real world and that of image on video camera. When there is no way to know the exact position of camera and it's height from the object. If some points on the road of real world are known it is possible to calculate the coordinates of real world from image.

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14:20 – 14:40

I-TP07-5

### A Synthetic Method for Generating Texture Patterns Similar to a Selected Original Texture Image

H.Tamura, O.Atoda, T.Honda  
(Tokyo Univ.)

The purpose of the study is to develop a synthetic method for generating arbitrary number of not the same but similar texture images. The method includes processes to extract basic shape elements from texture images originating in actual objects, to select them to reappear the image features and to arrange them in a image plane. The authors have already proposed the shape-pass type filter bank assuming that the sensual impression mainly depends on minute shapes existing in the texture images. By use of nine basic shape elements, namely black/white-roof, black/white-line, black/white-snake, black/white-pepper, and cliff, natural texture images originating in actual objects have been characterized by feature vectors in a nine dimensional space. To generate arbitrary number of similar texture images, minute shape pieces ...

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