I-TA07 Computer Vision and Image Processing 1

08:30-10:30 **Chair : Min Cheol Hong (Soongsil Univ.)**
Room : C207 **Co-Chair : Takita Yoshihiro (National Defense Academy)**

08:30 – 08:50 **I-TA07-1**

Automatic face detection using chromaticity sp ace and deformable templates

Kwansu Lee, Sung-Oh Lee, Byung-Ju Lee, Gwi-Tae Park
(Korea Univ.)

An automatic face recognition(AFR) of individuals is a significant problem in the development of computer vision. An AFR consists of two major parts which are detection of face region and recognition process, and the overall performance of AFR is determined by each. In this paper, the face region is acquired using chromaticity space, but this face region is a simple rectangle which doesn't consider the shape information. By applying deformable templates to the face region, we can locate the position of the eyes in images. With the face region and the eye location information, more precise face region can be extract from the image. Because processing time is critical in real-time system, we use simplified eye templates and the modified energy function for the efficiency. We can get a good detection performance in experiments.

08:50 – 09:10 **I-TA07-2**

Three Dimensional Volume Reconstruction of Polyhedral Objects Using X-ray Stereo Images

Young Jun Roh, Byung Man Kim, Hyung Suck Cho
(KAIST)

Three dimensional shape measurement techniques are widely needed in industries for product quality monitoring and control. X-ray imaging method is a promising technology to achieve three-dimensional information, both the surface and inner structure of an object, since it can overcome the limitations of conventional visual or optical methods such as an occlusion problem or surface reflection properties. In this paper, we propose three dimensional volume reconstruction method based on x-ray stereo imaging technology. Here, the stereo images of an object from two different views are taken by changing the object pose rather than moving imaging plane as in conventional stereo vision method. We propose a series of image processing techniques to extract the features efficiently from x-ray images, where the occluded features in case of normal camera vision could be found ...

09:10 – 09:30 **I-TA07-3**

Separation of Overlapped Objects Using Face Relation Features

Piljae SONG, Hongjoo CHOI, Hyungtai CHA, Hernsoo HAHN
(Soongsil Univ.)

This paper proposes a new algorithm that detects and separates the occluding and occluded objects in a 2D image. An input image is represented by the attributed graph where a node corresponds to a surface and an arc connecting two nodes describes the adjacency of the nodes in the image. Each end of arc is weighted by relation value which tells the number of edges connected to the surface represented by the node in the opposite side of the arc. In attributed graph homogeneous nodes pertained to the same object always construct one of three special patterns which can be simply classified by comparison of relation values of the arcs. The experimental results have shown that the proposed algorithm efficiently separates the objects ...

09:30 – 09:50 **I-TA07-4**

Land Mine Detecting Technology by Using IR Cameras

Nobuhiro SHIMOI(Tokyo National College of Technology) Yoshihiro TAKITA(Chiba Univ.) Kenzo NONAMI(National Defense Academy)
Katsumi WASAKI(Shinshu Univ.)

This paper proposes an IR camera system that performs the task of removing mines for humanitarian purposes. Because of the high risks involved, it is necessary to conduct mine detection from the most remote endeavoring. By making use of infrared ray (IR) cameras, scattered mines can be detected from remote locations. In the case of mines buried in the ground, detection is possible if the peripheral temperature difference is large enough between the ground and mine weapon. As one of the world's advanced nations in sensor technology, Japan should promote surveys and studies for detecting mines safely by using its advanced remote sensing technologies.

09:50 – 10:10 **I-TA07-5**

Classification of ArrhythmiaBased on Discrete Wavelet Transform and Rough Set Theory

M. -J. Kim, J. –S. Han, K, -H, Park, W. –C. Bang, and Z. Zenn Bien
(KAIST)

This paper investigates a classification method of the electrocardiogram (ECG) into different disease categories. The features for the classification of the ECG are the coefficients of the discrete wavelet transform (DWT) of ECG signals. The coefficients are calculated with Haar wavelet, and after DWT we can get 64 coefficients. Each coefficient has morphological information and they may be good features when conventional time-domain features are not available. Since all of them are not meaningful, it is needed to reduce the size of meaningful coefficients set. The distributions of each coefficient can be the rules to classify ECG signal. The optimally reduced feature set is obtained by fuzzy c-means algorithm and rough set theory. First, the each coefficient is clustered by fuzzy c-means algorithm and the clustered ...