

# I-FMP02 International Poster Session

14:00-14:50 Chair : Lee Man Hyung (Pusan National Univ.)  
Room : Terrace(3F) Co-Chair : Suh Il Hong (Hanyang Univ.)

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14:00 – 14:50

I-FMP-16

## Vision Based Map-Building Using Singular Value Decomposition Method for a Mobile Robot in Uncertain Environment

Kwang-Ho Park, Hyung-O Kim, Chang-Doo Kee, and Seung-Yu Na (Chonnam National Univ.)

This paper describes a grid mapping for a vision based mobile robot in uncertain indoor environment. The map building is a prerequisite for navigation of a mobile robot and the problem of feature correspondence across two images is well known to be of crucial importance for vision-based mapping. We use a stereo matching algorithm obtained by singular value decomposition of an appropriate correspondence strength matrix. This new correspondence strength means a correlation weight for some local measurements to quantify similarity between features. The visual range data from the reconstructed disparity image form an occupancy grid representation. The occupancy map is a grid-based map in which each cell has some value indicating the probability at that location...

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14:00 – 14:50

I-FMP-18

## Three-Dimensional Measurement of Moving Surface Using Circular Dynamic Stereo

K.Kawasue, S.Nagatomo (Miyazaki Univ.) Oya Yuichiro (West Japan Fluid Eng. Lab.), Takakazu Ishimatsu (Nagasaki Univ.)

By setting a refractor with a certain angle against the optical axis of the CCD camera lens, the image of a measuring point recorded on the image plane is displaced by the corresponding amounts related to the distance between the camera and the measuring point. When the refractor that keeps the angle against the optical axis is rotated physically at high speed during the exposure of the camera, the image of a measuring point draws an annular streak. Since the size of the annular streak is inversely proportional to the distance between the camera and the measuring point, the 3D position of the measuring point can be obtained by processing the streak. In this paper, for one of the applications of our system, the measurement of a moving surface is introduced. In order to measure the moving surface, multi laser spots are projected on the surface of object. Each position of ...

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14:00 – 14:50

I-FMP-20

## Linear Input/Output Data-based Predictive Control with Integral Property

In-Hyoup Song, Kee-Youn Yoo, Myung-Jung Park and Hyun-Ku Rhee (Seoul National Univ.)

A linear input/output data-based predictive control with integral action is developed. The control input is obtained directly from the input/output data in a single step. However, the state estimation in subspace identification gives a biased estimate and there is model mismatch when the controller is applied to a nonlinear process. To overcome such difficulties, we add integral action to a linear input/output data-based predictive controller by augmenting the integrated white noise disturbance model and use each of best linear unbiased estimation (BLUE) filter and Kalman filter as a stochastic observer for the unmeasured disturbance. When applied to a continuous styrene polymerization reactor the proposed controller demonstrates improved control performance.

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14:00 – 14:50

I-FMP-17

## Pose Invariant View-Based Enhanced Fisher Linear Discriminant Models for Face Recognition

Sung-Oh Lee, and Gwi-Tae Park (Korea Univ.)

This paper proposes a novel face recognition algorithm to recognize human face robustly under various conditions, such as changes of pose, illumination, and expression, etc. at indoor environments. A conventional automatic face recognition system consists of the detection and the recognition part. Generally, the detection part is dominant over the other part in the estimating whole recognition rate. So, in this paper, we suggest the view-specific eigenface method as preprocessor to estimate various poses of the face in the input image. Then, we apply the Enhanced FLD Models (EFM) to the result of it, twice. Because, the EFM recognizes human face, and reduces the error of standardization effectively. To deal with view-varying problem, we build one basis vector set for each view individually. Finally, the dimensionalities of ...

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14:00 – 14:50

I-FMP-19

## Two-Phase Distributed Evolutionary algorithm with Inherited Age Concept

Young-Hoon Kang, and Z. Zenn Bien (KAIST)

Evolutionary algorithm has been receiving a remarkable attention due to the model-free and population-based parallel search attributes and much successful results are coming out. However, there are some problems in most of the evolutionary algorithms. The critical one is that it takes much time or large generations to search the global optimum in case of the objective function with multimodality. Another problem is that it usually cannot search all the local optima because it pays great attention to the search of the global optimum. In addition, if the objective function has several global optima, it may be very difficult to search all the global optima due to the global characteristics of the selection methods. To cope with these problems, at first we propose a preprocessing process, grid-filtering algorithm (GFA), and propose a new distributed evolutionary ...

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14:00 – 14:50

I-FMP-21

## Development of Inspect Algorithm for Pallets Using Vision System

K. Kyungmin, P. Joongjo and S. Myunghyun (Yosu National Univ.)

This paper deals with inspect algorithm using visual system. One of the major problems that arise during polymer production is the estimation of the noise of the product (bad pallets). An erroneous output can cause a lot of losses (production and financial losses). Therefore new methods for real-time inspection of the noise are demanded. For this reason, we have presented a development of vision system algorithm for the defect inspection of PE pallets. First of all, in order to detect the edge of object, the differential filter is used. And we apply to the labeling algorithm for feature extraction. This algorithm is designed for the defect inspection of pallets...

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