

# FM01

## Poster Session

09:00 – 11:00

Room : base 2nd Floor-Zillertal

Chair1 : Hie sik Kim ( Univ. of Seoul, Korea )

Chair2 : Tae-Kyu Kwon ( Chonbuk Nat'l Univ., Korea )

FM01-7

### Modular Failure Diagnosis for Discrete Event Systems

HeePyo Kim, JoonHyo Park, DongHoon Lee, Suk Lee(Pusan Nat'l Univ., KOREA)

- Abstract
- Introduction
- Building a Model for Diagnosis
- Modular Approach to Diagnosis
- Extension to a General Case
- Conclusion
- References

FM01-8

### A New Adaptive Image Separation Scheme using ICA and Innovation Process with EM

Sung-Soo Kim, Jeong-Woong Ryu, Bum-Jin Oh(Chungbuk Nat'l Univ., KOREA)

: In this paper, a new method for the mixed image separation is presented using the independent component analysis, the innovation process, and the expectation-maximization. In general, the independent component analysis (ICA) is one of the widely used statistical signal processing scheme that represents the information from observations as a set of random variables in the form of linear combinations of another statistically independent component variables. In various useful applications, ICA provides a more meaningful representation of the data than the principal component analysis through the transformation of the data to be quasi-orthogonal to each other, which can be utilized in linear p...

FM01-9

### Fault Feature Clarification in the Residual for Fault Detection and Diagnosis of Control Systems

Jonghyo Lee, Joon Lyou(Chungnam Nat'l Univ., KOREA)

A scheme of clarifying fault feature in the residual is given for model-based fault detection and diagnosis of control systems. It is based on the residual generation using a robust filter and the noise suppression in test statistics of the residual by multi-scale discrete wavelet transform. By clarifying the fault feature in the residual, the difficulties of existing model based approaches via adopting a threshold can be overcome and it has advantage of taking the false alarm and missed detection into account at the same time, which can make the fault detection and diagnosis easy and correct. To show the effectiveness of our approach, the simulation results are illustrated for a linear system...

FM01-10

### Inspection of Calandria Reactor Area of Wolsung NPP using Thermal Infrared and CCD Images

JaiWan Cho, ChangHoi Kim, YongChil Seo, YoungSoo Choi, SeungHo Kim(KAERI, KOREA)

Thermal infrared imaging is a highly promising technology for condition monitoring and predictive maintenance of electronic, electrical and mechanical elements in nuclear power plants. However, conventional low-cost infrared imaging systems suffer from poor spatial resolution compared to commercial CCD cameras. This paper describes an approach to enhance inspection performances for calandria reactor area of Wolsung nuclear power plant through the technique of superimposing thermal infrared image into real CCD image. In the occurrence of thermal abnormalities on observation points and areas of calandria reactor area, unusual hot image taken from thermal infrared camera is mapped upon re...

FM01-11

### A Study on Extraction of the Center Point of Steam Generator Tubes of YoungKwang Nuclear Power Plant

JaiWan Cho, ChangHoi Kim, YongChil Seo, YoungSoo Choi, SeungHo Kim(KAERI, KOREA)

This paper describes extraction procedures for the center coordinates of steam generator tubes of Youngkwang nuclear power plant No. 6 unit. The centering coordinates of tubes are needed for monitoring whether ECT probe is exactly inserted into tube or not. However, The tube image tends to have poor contrast because steam generator bowl is sealed. The centering coordinates extraction procedure consists of two steps. The first step is to process the region with high contrast in entire image of steam generator tubes. Using the center points extracted in the first step and the geometry of tubes lined up in regular triangle patterns the centering coordinates of the rest region with low contrast ...

FM01-12

### Development of an Image Processing Hardware for Detecting Defects on the surface of the High Speed Moving Plate

Sejeong Jang, Kwangsuck Boo, Jeonghoon Song(Inje Univ., KOREA), Seungyoung Lee(AutoEn Co. Ltd, KOREA)

In this study an image processing system is designed and developed, which can detect and assort some defects on the surface of an object moving with high speed. For real time surface detection of high speed moving object, the fast processing should be managed and the image information including some surface features should be captured. It is difficult to acquire the noise free image due to various light sources and high speed moving materials under the environment of the general industrial site. In general, because pre-processing methods are employed for getting a noise free feature, the image processing speed has some limitation and the expensive image processing devices are required. This ...