TE07

Identification II

15:40-17:40 **Chair1 : Kyoung ho Choi (Gifu Univ., JAPAN)**
Room : 1st Floor-Seefeld **Chair2 :**

15:40 – 16:00 **TE07-1**

Mixed H2/H infinity FIR Filters for Discrete-time State Space Models

Young Sam Lee, Wook Hyun Kwon,
Soo Hee Han(Seoul Nat'l Univ., KOREA)

Young Sam Lee : He is currently a PhD candidate student. His research interest includes time-delay systems, signal processing, and receding horizon control.
Wook Hyun Kwon : His research interest includes time-delay systems, signal processing, receding horizon control, and robust control. He is the president of IFAC 2008 which is to be held in Korea.
Soo Hee Han : He is currently a PhD candidate student. His research interest includes time-delay systems, signal processing, receding horizon control, and communication.

16:00 – 16:20 **TE07-2**

An Approach to a Formal Linearization for Time-variant Nonlinear Systems using Polynomial Approximations

Kazuo Komatsu(Kumamoto Univ., JAPAN),
Hitoshi Takata(Kagoshima Univ., JAPAN)

In this paper we consider an approach to a formal linearization for time-variant nonlinear systems. A time-variant nonlinear sysetm is assumed to be described by a time-variant nonlinear differential equation. For this system, we introduce a coordinate transformation function which is composed of the Chebyshev polynomials. Using Chebyshev expansion to the state variable and Laguerre expansion to the time variable, the time-variant nonlinear sysetm is transformed into the time-variant linear one with respect to the above transformation function. As an application, we synthesize a time-variant nonlinear observer. Numerical experiments are included to demonstrate the validity of...

16:20 – 16:40 **TE07-3**

Feedback FE model updating using strain modeshapes

Jongho Lee, Hunsang Jung, Youngjin Park(KAIST, KOREA)

Natural frequencies and mode shapes are two important modal data which specify the system. If the real system and FE model don't have the same local physical parameters, there will be a difference between modal data from real system and FE model. Because there is little difference in displacement mode shapes measured by an accelerometer, displacement modal update based on mode shapes including measurement errors may not be successful. In this research, strain mode shapes are used as modal data because the strain mode shapes measured by strain gauges are more sensitive than the displacement mode shapes with respect to the change of the parameters concerned in FE stiffness matrix. ...

16:40 – 17:00 **TE07-4**

Identification of the air separation unit using subspace-based method

donghoon Lee, sangchul Won(POSTECH, KOREA)

- Introduction
- Wiener system identification problem
- Identification method
- Simulation
- Conclusions
- References

17:00 – 17:20 **TE07-5**

Emotion recognition from brain waves using artificial immune system

Kyoung ho Choi, Sasaki Minoru(Gifu Univ., JAPAN)

In this paper, we develop analysis models for classification of temporal data from human subjects. The study focuses on the analysis of electroencephalogram (EEG) signals obtained during various emotional states. We demonstrate a generally applicable method of removing EOG and EMG artifacts from EEGs based on independent component analysis (ICA). All EEG channel maps were interpolated from 10 EEG subbands. ICA methods are based on the assumptions that the signals recorded on the scalp are mixtures of signals from independent cerebral and artifactual sources, that potentials arising from different parts of the brain, scalp and body are summed linearly at the electrodes, and that prop...

14:00 – 14:50 **TE07-6**

System Identification Using Observer Kalman filter Identification

Hee-Seob Ryu(IAE, KOREA), Ho-Jun Yoo(Inha Univ., KOREA), Dae-Woo Kim(Unix Electronics Ltd. Co., KOREA)

The method of identifying the plant models in this paper is the Observer Kalman filter identification (OKID) method. This method of system identification has several pertinent advantages. First, it assumes that the system in question is a discrete linear time-invariant (LTI) state-space system. Second, it requires only input and output data to formulate the model, no a priori knowledge of the system is needed. Third, the OKID method produces a psudo-Kalman state estimator, which is very useful for control applications. Last, the modal balanced realization of the system model means that tuncation errors will be small. Thus, even in the case of model order error the results of that error will ...