

COURSE	Name : Identification and Filtering
	Code : EE185222
	Credit(s) : 3
	Semester : II

Description of Course

This course discusses the method of signal processing for disturbed signal to obtain a model, or identification, of the system that generates the signal. The model used is a discrete time model and is applied to estimate and predict the system state based on the identified model. The system models include ARMA, ARMAX, and ARIMA models used for state estimation and prediction using Wiener filters and Kalman filters.

Learning Outcomes

Knowledge

(P01) Mastering the concepts and principles of science in a comprehensive manner, and to develop procedures and strategies needed for the analysis and design of systems related to the field of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics as a preparation for further education or professional career.

(P02) Mastering engineering concepts and principles to develop the necessary procedures and strategies for systems analysis and design in the areas of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

Specific Skill

(KK01) Being able to formulate engineering problems with new ideas for the development of technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

(KK02) Being able to compose problem solving in engineering through depth and breadth of knowledge which adapts to changes in science and technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU11) Being able to implement information and communication technology in the context of execution of his/her work.

Attitude

(S11) Trying his/her best to achieve perfect results.

Course Learning Outcomes

Knowledge

Mastering the concept, analysis, and application of linear system modeling from input and output measurement data

Mastering estimation concept and state estimation design for linear and nonlinear systems

Specific Skill

Able to model the measurement data of the input system output and analyze the model obtained

Able to perform analysis and design of state estimators for linear and nonlinear systems

General Skill

Able to make implementation of system identification and state estimation in the form of computer programs

Main Subjects

1. System Identification
2. Wiener Digital Filter
3. Kalman Filter
4. Wiener filter and Kalman filter Applications

Reference(s)

- [1] Alkaff, A. Diktat Kuliah Teknik Penyaringan Optimal
- [2] Candi, J.A., Model Based Signal Processing, Wiley-IEEE, 2006
- [3] Brown, R.G. dan Y.C. Hwang, Introduction to Random Signals and Applied Kalman Filtering, 4th ed, Wiley, 2012
- [4] Shanmugan, K.S. dan A. M. Breiphof, Random Signals: Estimation, Detection, and Data Analysis, Wiley, 1988

Prerequisite(s)

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