Book Announcements

ICHIKAWA, K., Sophia University, ***Control System Design Based on Exact Model Matching Techniques,*** Springer-Verlag, New York, 129 pages $13.00.

Purpose: This book is a summary of the author's reseach in the area of exact model matching.

Contents: Introduction. Time domain exact model matching. Frequency domain exact model matching. Adaptive control. Disturbance in exact model matching and control. Adaptive pole assignment. Decoupling control with exact model matching. Multivariable adaptive control. Discrete time system. Time delay system.

EVTUSHENKO, Y.G., USSR Academy of Sciences, ***Numerical Optimization Techniques,*** Springer-Verlag, New York, 1985, 558 pages. $68.00.

Purpose: This book presents numerical methods for solving nonlinear programming and optimal control problems. Special attention is given to methods which have been extensively tested at the USSR Academy of Sciences Computing Center. The book is primarily a reference text.

Contents: An introduction to optimization theory. Convergence theorems and their application to the investigation of numerical methods. The penalty function method. Numerical methods for solving nonlinear programming problems using modified Lagrangians. Relaxation methods for solving nonlinear programming problems. Numerical methods for solving optimal control problems. Search for global solutions. Appendices. Index.

MAHMOUD, M.S., Kuwait University, and **SINGH, M.G.,** UMIST, ***Discrete Systems—Analysis, Control and Optimization,*** Springer-Verlag, 1984, 669 pages. $49.50.

Purpose: This book has been developed for a first-year graduate course.

Contents: Discrete models in systems engineering. Representation of discrete control systems. Structural properties. Design of feedback systems. Control of systems with inaccessible states. State and parameter estimation. Adaptive control systems. Dynamic optimization. Indices.

FRIEDLAND, B., The Singer Company and Polytechnic Institute of New York, ***Control System Design—An Introduction to State-Space Methods,*** McGraw-Hill, New York, 1986, 513 pages. $41.95.

Purpose: This book has been developed on the basis that state-space methods for linear control system design are important and that for them to become widely used by practicing engineers they must be taught at the undergraduate or first-year graduate level.

Contents: Feedback control. State-Space representation of dynamic systems. Dynamics of linear systems. Frequency-domain analysis. Controllability and observability. Shaping the dynamic response. Linear observers. Compensator design by the separation principle. Linear, quadratic optimum control. Random processes. Kalman filters: optimum observers. Appendix. Index.

GODFREY, K., and **JONES, P.,** Editors, University of Warwick, ***Signal Processing for Control,*** Springer-Verlag, New York, 1986, 420 pages. $31.40.

Purpose: This text contains the published notes for a short course on signal processing presented primarily to research students. Each topic in the table of contents has a separate author.

Contents: Signal analysis I. Systems analysis I. Matrix techniques. Relevant probability theory. Relevant statistics theory. Systems analysis II. Signal anlaysis II. Design and implementation of digital filters. Parameter estimation. Recursive methods in identification. Spectral analysis and applications. Observers, state estimation and prediction. Introduction to nonlinear systems analysis and identification. An introduction to discrete-time self-tuning control. Exploring biological signals. Stochastic methods and engineering surfaces. Practical problems in identification. LQG design of ship steering control systems.

DORF, R.C., University of California at Davis, ***Modern Control Systems,*** Addison-Wesley, New York, 1986, 539 pages. $40.95.

Purpose: This text (fourth edition) has been designed for an introductory undergraduate course in control systems for engineering students. Examples are chosen from all areas of engineering, and additional examples from nonengineering fields are included to demonstrate the breadth of control theory.

Contents: Introduction to control systems. Mathematical models of systems, Feedback control system characteristics. The performance of feedback control systems. The stability of linear feedback systems. The root locus method. Frequency response methods. Stability in the frequency domain. Time-domain analysis of control systems. The design and compensation of feedback control systems. Digital control systems. Appendices. Index.