Book Announcements

TRAVE, L., TITLI, A., and **TARRAS, A.,** ***Large Scale Systems: Decentralization, Structure Constraints, and Fixed Modes,*** Lecture Notes in Control and Information Sciences, Vol. 120, Springer-Verlag, Berlin, 1989, 384 pages.

Purpose: This book presents the latest results on analysis of stabilizability and pole placement and control law design under decentralized constraints and when decentralized dynamic compensation fails.

Contents: Centralized control: stabilization and pole assignment; structurally constrained control: stabilization and pole assignment; characterization of fixed modes; decentralized stabilization in presence of nonstructurally fixed modes; choice of feedback control structure to avoid fixed modes; design techniques – parametric robustness; structural robustness; appendices.

DE SILVA, C. W., and **MACFARLANE, A. G. J.,** ***Knowledge-Based Control with Application to Robots,*** Lecture Notes in Control and Information Sciences, Vol. 123, Springer-Verlag, Berlin, 1989, 196 pages.

Purpose: An integrated treatment of algorithmic and knowledge-based control architecture for robotic manipulators is presented. Examples using the MUSE artificial intelligence toolkit are discussed.

Contents: Background; dynamic formulation of robot behavior; fuzzy logic; control structure; system development; performance evaluation; conclusions.

BAHNASAWI, A. A., and **MAHMOUD, M. S.,** ***Control of Partially-Known Dynamical Systems,*** Lecture Notes in Control and Information Sciences, Vol. 124, Springer-Verlag, Berlin, 1989, 228 pages.

Purpose: This book deals with the stabilization of systems with uncertain parameters. The main focus is on reduced-order adaptive control schemes and deterministic stabilizing control.

Contents: Introduction; continous systems with reduced models; robust control of discrete systems; nonlinear feedback of discrete systems; multiple-controller schemes for discrete systems; interconnected systems: continous and discrete cases; summary and conclusions.

TÖRN, A. and **ŽILINSKAS, A.,** ***Global Optimization,*** Lecture Notes in Computer Science, edited by G. Goos and J. Hartmanis, Springer-Verlag, Berlin, 1989, 225 pages.

Purpose: This book deals with unconstrained global optimization of continuous systems.

Contents: Covering methods; methods of generalized descent; random search methods; clustering methods; methods based on statistical models of objective functions; miscellaneous; testing and applications.

BAINOV, D. D., and **SIMEONOV, P. S.,** ***Systems with Impulse Effect, Stability, Theory and Applications,*** Ellis Horwood Ltd., Chichester, U. K., 1989, 255 pages.

Purpose: This book presents the theory stability analysis of systems that undergo sudden changes in their states.

Contents: Introduction; Lyapunov's first and second methods for systems with impulse effect.

ZAYEZDNY, A., TABAK, D., and **WULICH, D.,** ***Engineering Applications of Stochastic Processes: Theory, Problems, and Solutions,*** Research Studies Press Ltd., Taunton, Somerset, U.K., 1989, 509 pages.

Purpose: The theoretical and practical methods of probabilistic computations associated with engineering-oriented disciplines such as communications, radar, and automatic control are discussed in this volume.

Contents: Probabilistic calculations for single trials; probablistic calculations for multiple trials; distribution functions and their numerical characteristics; distribution functions of random variables; distribution of systems of random variables; laws of large numbers and limit theorems; time, correlation and spectral characteristics of random processes; additional methods of representation and description of probabilistic characterization of random signals and processes; linear systems response to random signals; nonlinear systems response to random signals; appendices.

BELLANGER, M., ***Digital Processing of Signals: Theory and Practice,*** 2nd ed., Wiley, New York, 1989, 388 pages.

Purpose: This book treats digital signal processing with an elementary approach.

Contents: Signal digitizing – sampling and coding; discrete Fourier transform; unified representation of fast Fourier transform and other fast algorithms; time-invariant discrete linear systems; finite-impulse response filters; infinite-impulse response filters; digital ladder filters; complex signals and minimum phase filters; multirate filtering; adaptive filtering; circuits and factors of complexity; applications in telecommunications.