gives reasonable performance, especially when the system has some small singular values and the corresponding states are truncated. The proposed method does not require any iterative calculation for optimization, and its computational demand is small.

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Book Announcements

STONE, H.W., Carnegie Mellon University, ***Kinematic Modeling, Identification, and Control of Robotic Manipulators***, Kluwer Academic, Norwell, MA, 1987, 256 pages, $45.00.

Purpose: This book describes the formulation of a new robot kinematic model designed particularly for solving the kinematic parameter identification problem for N degree-of-freedom robotic manipulators with rigid links.

Contents: Review of robot kinematics; identification and control; formulation of the S-model; kinematic identification; inverse kinematics; prototype system and performance evaluation; performance evaluation based upon simulation.

LJUNG, L, Linkoping University, and **SODERSTROM, T.**, Uppsala University, ***Theory and Practice of Recursive Identification***, The MIT Press, Cambridge, 1987, 552 pages.

Contents: Introduction. Approaches to recursive identification. Models and methods: a general framework. Analysis. Choice of algorithms. Implementation. Applications to recursive identification. Appendices. Index.

BHATTACHARYYA, S.P., Texas A&M University, ***Robust Stabilization Against Structured Perturbations***, Lecture Notes in Control and Information Sciences, Vol. 99, Springer-Verlag, New York, 1987, 172 pages, $25.10.

Purpose: This book deals with the analysis and design of control systems for plants that contain physical parameters subject to highly structured perturbations.

Contents: The stability hypersphere in parameter space; stability ellipsoids and perturbation polytopes; robust stabilization; structured perturbations in state space models; stabilization with fixed-order controllers; state space design of low-order regulators.

ALONEFTIS, A., ***Stochastic Adaptive Control Results and Simulations***, Lecture Notes in Control and Information Sciences, Vol. 98, Springer-Verlag, New York, 1987, 120 pages, $20.60.

Purpose: This book presents the direct method of parameter self-tuning control as applied to linear single-input-single-output time invariant systems subject to random disturbances, and its extension to the control of time varying systems.

Contents: Self-tuning control of systems with random disturbances; computer simulations to self-tuning control algorithms; adaptive control of systems with random disturbances; computer simulations of adaptive control algorithms.

PAVELLE, R., Editor, Symbolics, Inc., ***Applications of Computer Algebra***, Kluwer Academic, Norwell, MA, 1985, 446 pages, $59.95.

Purpose: This volume provides a broad introduction to the capabilities of computer algebra systems that perform numeric and non-numeric computations.

Contents: Macsyma; using Vaxima to write Fortran code; applications of symbolic mathematics to mathematics; stability analysis and optimal control; Fourier transform algorithms for spectral analysis derived with Macsyma; application of Macsyma to kinematics and mechanical systems; derivation of the Hopf bifurcation formula using Linstedt's perturbation method and Macsyma; exact solutions for superlaticces and how to recognize them with computer algebra; computer generation of symbolic generalized inverses and applications to physics and data analysis.

FEATHERSTONE, R., University of Edinburgh, Scotland, UK, ***Robot Dynamics Algorithms***, Kluwer Academic, Norwell, MA, 1987, 224 pages, $42.50.

Purpose: This book examines methods of calculating the equations of motion for a robot mechanism that can be implemented efficiently on a computer.

Contents: Spatial kinematics; spatial dynamics; inverse dynamics: the recursive Newton-Euler method; forward dynamics: the composite-rigid-body method; forward dynamics: the articulated-body method; extending the dynamics algorithms; coordinate systems and efficiency; contact, impact, and kinematic loops.

La SALLE, J.P., ***The Stability and Control of Discrete Processes***, Applied Mathematics Sciences, Volume 62, Springer-Verlag, New York, 1986, 150 pages, $22.00.

Purpose: This book deals with the interaction between stability theory and control theory and, connected with that, the stability of dynamical systems.

Contents: Liapunov's direct method; a characterization of stable matrices; computational criteria; Liapunov's characterization of stable matrices; variation of parameters and undermined coefficients; forced oscillations; systems of higher-order equations; the equivalence of polynomial matrices; the control of linear systems; controllability; stabilization by linear feedback; pole assignment; minimum energy control; minimal time-energy feedback control; observability; observers; state estimation; stabilization by dynamic feedback.