Book Announcements

CROUCH, P. E. and VAN DER SCHAFT, A. J., *Variational and Hamiltonian Control Systems,* Lecture Notes in Control and Information Sciences, Vol. 101, Springer-Verlag, New York, 1987, 121 pages.

Purpose: This volume is concerned with the charaterization of Hamiltonian control systems in terms of their variational input-output behavior.

Contents: Hamiltonian realization problem; variational and adjoint variational systems; minimality of the prolongation and Hamiltonian extension; self-adjointness criterion; variational criterion; general nonlinear systems; comments on some open problems.

REINSCHKE, K. J., *Multivariable Control: A Graph Theoretic Approach,* Lecture Notes in Control and Information Sciences, Vol. 108, Springer-Verlag, New York, 1988, 274 pages.

Purpose: This monograph presents a graph theoretic approach to the analysis and synthesis of linear time-invariant multivariable control systems.

Contents: Digraph modeling of large-scale dynamic systems; digraph approach to controller synthesis based on static state and output feedback; further exploitation of the graph theoretic approach to controller synthesis.

KECKMAN, V., *State-Space Models of Lumped and Distributed Systems,* Lecture Notes in Control and Information Sciences, Vol. 112, Springer-Verlag, New York, 1988, 280 pages.

Purpose: This work is devoted to the science and art of the mathematical description of dynamics of systems with spatially lumped and distributed parameters.

Contents: Lumped processes; distributed processes; mass storage; fluid flow; heat processes; mechanical processes; mass and energy transportation processes; processes with equalization; processes with periodic state changes.

RADHARAMANAN, R., (Ed.), *Robotics and Factories of the Future '87,* Springer-Verlag, New York, 1988, 844 pages.

Purpose: This volume is the proceedings of the second international conference on robotics and factories of the future.

Contents: Planning of automation; CAD/CAM; CIM/FMS; kinematic analysis; dynamics and control; trajectory planning; sensors and vision systems; AI and expert systems; mobile robots/robotic devices; robot applications; automation and innovation in mining; CAD/CAM and robotics education/training; safety, human resources, and social economic implications.

ANDERSON, J. D., *Introduction to Flight,* 3rd ed., McGraw-Hill, New York, 1989, 616 pages.

Purpose: This book presents the fundamentals of aerospace engineering at the introductory level.

Contents: The first aeronautical engineers; fundamental thoughts; standard atmosphere; basic aerodynamics; airfoils, wings, and other aerodynamic shapes; elements of airplane performance; principles of stability and control; astronautics; propulsion; hypersonic vehicles.

SKELTON, R. E., *Dynamic Systems Control: Linear Systems Analysis and Synthesis,* Wiley, New York, 1988, 497 pages.

Purpose: This text is designed for a second course in modeling and control of dynamic systems.

Contents: Mathematical preliminaries; models of dynamic systems; properties of state-space realizations; controllability and observability; equivalent realizations and model reduction; stability; optimal control of time-invariant systems; state estimation; model error concepts and compensation.

Erratum

Expert Systems Approach for Generalized Traveling Salesman Problem

Yuval Lirov

Washington University, St. Louis, Missouri

THE following errors were introduced inadvertently during the production of the paper:

p. 425:

On line 4 of the first paragraph, the definition for "NP-hard" in parentheses should appear as "(not polynomially hard)."

p. 428:

The last line in the rule VR2 belongs to the left-hand side of the next rule, VR3.