Book Announcements

ZEE, CHONG-HUNG, *Theory of Geostationary Satellites,* Kluwer Academic Publishers, Boston, 1989, 267 pages.

Purpose: This book deals with the theory of geostationary satellites. The treatment of perturbed motion is based on the theory of nonlinear oscillations.

Contents: Earth's gravitational field and basic methodology; effect of earth's equatorial ellipticity; sun, moon, and solar radiation effects; station-keeping; verification of the theory by the early bird synchronous satellite; appendices.

OTTEN, R. H. J. M. and **VAN GINNEKEN, L. P. P. P.,** *The Annealing Algorithm,* Kluwer Academic Publishers, Boston, 1989, 201 pages.

Purpose: This book presents the foundations of annealing, a procedure for combinatorial optimization.

Contents: Annealing algorithm: a preview; preliminaries from matrix theory; chains; chain statistics; annealing chains; samples from normal distributions; score densities; the control parameter; finite-time behavior of the annealing algorithm; structure of the state space; implementation aspects.

GOLUMBIC, M. C., Ed., *Advances in Artificial Intelligence: Nature Language and Knowledge-Based Systems,* Springer-Verlag, Berlin, 1990, 303 pages.

Purpose: This volume presents selected papers presented at a recent AI conference held in Israel.

Contents: Learning from experience in board games; PRODS: A prototype-based design shell for prototype selection and prototype refinement; what's a joke; machinery for Hebrew word formation; theory formation for interpreting an unknown language; ontology, sublanguage, and semantic networks in natural language processing; an incremental conceptual clustering algorithm that reduces input-ordering bias; anticipating a listener's response in text planning; towards an intelligent finite-element training system; Bayesian inference in an expert system without assuming independence; a partial order semantics for constraint-based systems; partial orders as a basis for KBS semantics; a heuristic search approach to planning and scheduling software manufacturing projects; from data to knowledge bases.

BARAS, J. S. and **MIRELLI, V.,** (Eds.), *Recent Advances in Stochastic Calculus,* Springer-Verlag, Berlin, 1990, 217 pages, $39.00.

Purpose: This volume contains papers presented in the Distinguished Lecture Series on Stochastic Calculus at the Systems Research Center of the University of Maryland in 1987.

Contents: Filtering and control for point process observations; nonlinear filtering theory; introduction to Malliavin calculus and some of its applications; stochastic calculus on manifolds with applications; controlled Markov chains on a countable state space: some recent results; Martingale problems for constrained Markov problems; applications of stochastic calculus in financial economics.

GRAY, R. M., *Entropy and Information Theory,* Springer-Verlag, Berlin, 1990, 332 pages, $53.50.

Purpose: This volume presents the theory of probabilistic information measures and their application to coding theorems for information sources and noisy channels.

Contents: Information sources; entropy and information; entropy ergodic theorem; information rates I; relative entropy; information rates II; relative entropy rates; ergodic theorems for densities; channels and codes; distortion; source coding theorems; coding for noisy channels.

JACKSON, E. A., *Perspectives of Nonlinear Dynamics,* Cambridge University Press, Cambridge, U. K., 1989, 495 pages.

Purpose: This book presents a variety of mathematical methods and viewpoints to study a wide spectrum of nonlinear systems.

Contents: In the beginning; potpourri of basic concepts; first-order differential systems; models based on first-order difference equations; second-order differential systems; appendices.