Systèmes, contrôle optimal

of the book includes the following major topics: life cycle management; life cycle design; design for environment and recycling, life cycle assessment; disassembly, IT-networks. This book will be essential reading for engineers, research and development personnel, as well as managerial staff in industry and research organisations.

Systèmes, contrôle optimal

Martino BARDI, Italo CAPUZZO-DOLCETTA. — **Optimal control and viscosity solutions of Hamilton-Jacobi-Bellman equations.** — Systems & control: foundations & applications. — Un vol. relié, 16,5×24, de XVII, 570 p. — ISBN 0-8176-3640-4. — Prix: SFr. 178.00. — Birkhäuser, Boston, 1997.

The book begins with an extensive introduction in which the authors present the main ideas and themes of the book, beginning with the classical derivation of the Hamilton-Jacobi-Bellman equation from the Dynamic Programming Optimality Principle and the characterization of the value function as the unique viscosity solution of this equation. This is then followed by a treatment of the general theory of continuous viscosity solutions and their applications to a number of problems in deterministic optimal control theory (infinite and finite horizon, minimal time, optimal stopping, ...etc.), one of the most important being an approximation scheme for the value function and for optimal feedback controls based on dynamic programming.

Jaoquim António dos Santos GROMICHO. — **Quasiconvex optimization and location theory.** — Applied optimization , vol. 9. — Un vol. relié, 16,5×24,5, de XXI, 218 p. — ISBN 0-7923-4694-7. — Prix: Dfl. 190.00. — Kluwer Academic Publishers, Dordrecht, 1998.

The book includes variants of the ellipsoid method for convex and quasiconvex problems and applies them to very general convex and quasiconvex models in location theory. It starts by describing the adopted notation and provides basic details of convexity and convex optimization. Many techniques in convex optimization rely on the use of separation hyperplanes. The book uses the ellipsoid method as an illustration of such a technique and provides a new and more stable version of this method. The second part of the book generalizes the new algorithm to solve quasiconvex programs.

Jean-Baptiste HIRIART-URRUTY. — **Optimisation et analyse convexe.** — Collection Mathématiques. — Un vol. broché, 15×21,5, de 376 p. — ISBN 2-13-048983-4. — Prix: FF 198.00. — Presses universitaires de France, Paris, 1998.

Ce livre est un recueil d'exercices et problèmes corrigés, de difficulté graduée, accompagnés de commentaires sur l'utilisation du résultat obtenu, sur un prolongement possible, et occasionnellement, placés dans un contexte historique. Le cadre de travail est volontairement simple. L'auteur a voulu insister davantage sur les idées et mécanismes de base, que sur des généralisations possibles ou des techniques particulières à telle ou telle situation. Les connaissances mathématiques pour tirer profit du recueil ont été maintenues minimales, celles normalement acquises après une formation scientifique de deux ou trois années à l'université.

Bronisław JAKUBCZYK, Witold RESPONDEK, (Editors). — **Geometry of feedback and optimal control.** — Pure and applied mathematics, vol. 207. — Un vol. relié, 16,5×23,5, de VII, 564 p. — ISBN 0-8247-9068-5. — Prix: US$165.00. — Marcel Dekker, New York, 1998.

Elucidating complex material and providing new directions for future research, the book discusses the latest applications, illustrating links between topics such as the Pontryagin Maximum Principle, differential geometric and symplectic methods, and the structure of

reachable sets; furnishes the most recent problems, including feedback stabilization, classification, and invariants; covers the optimality of trajectories using the Maslov index; delineates the role of singularity theory in stability theory and feedback equivalence; explores singularities of systems, reachable sets, and stabilizing and optical controls... and more.

Athanasios MIGDALAS, Panos M. PARDALOS, Peter VÄRBRAND, (Editors). — **Multilevel optimization: algorithms and applications.** — Nonconvex optimization and its applications, vol. 20. — Un vol. relié, 16×24,5, de XII, 384 p. — ISBN 0-7923-4693-9. — Prix: Dfl. 320.00. — Kluwer Academic Publishers, Dordrecht, 1998.

The field of multilevel optimization has become a well-known and important research field. Hierarchical structures can be found in scientific disciplines such as environment, ecology, biology, chemical engineering, mechanics, classification theory, databases, network design, transportation, game theory and economics. Moreover, new applications are constantly being introduced. This has stimulated the development of a new theory and efficient algorithms. This volume contains 16 chapters written by various researchers and presents a cohesive authoritative overview of developments and applications in this emerging field of optimization.

Teng-Tiow TAY, Iven MAREELS, John B. MOORE. — **High performance control.** — Systems & control. — Un vol. relié, 16×24, de XVI, 344 p. — ISBN 0-8176-4004-5 (Boston), 3-7643-4404-5 (Basel, pbk). — Prix: SFr. 148.00. — Birkhäuser, Boston,1998.

High performance control deals with guaranteed stability and performance properties in systems that are subject to a variety of uncertainties and external disturbances. It is of particular importance in engineering applications where undesirable physical properties or operating characteristics of the system, such as vibration, noise, and process variations must be overcome to insure proper working of the system. The authors use the tools of optimal control, robust control, and adaptive control to develop the theory and practice of high performance control in a real world environment.

Hoang TUY. — **Convex analysis and global optimization.** — Nonconvex optimization and its applications, vol. 22. — Un vol. relié, 16,5×24,5, de XI, 339 p. — ISBN 0-7923-4818-4. — Prix: Dfl. 240.00. — Kluwer Academic Publishers, Dordrecht, 1998.

Convex analysis plays an essential rôle in the development of global optimization methods. This book develops a coherent and rigorous theory of deterministic global optimization from this point of view. Part I constitutes an introduction to convex analysis, with an emphasis on concepts, properties and results particularly needed for global optimization, including those pertaining to the complementary convex structure. Part II presents the foundations and application of global search principles such as partitioning and cutting, outer and inner approximation, decomposition, to general global optimization problems and to problems with a low rank nonconvex structure as well as quadratic problems.

Information, communication, circuits

John BAYLIS. — **Error-correcting codes: a mathematical introduction.** — Chapman & Hall mathematics series. — Un vol. broché, 16×23,5, de XII, 219 p. — ISBN 0-412-78690-7. — Prix: £24.99. — Chapman & Hall, London, 1998.

Topics covered in the book include optimal codes, linear and non-linear codes, general techniques of decoding errors and erasures, error detection, syndrome decoding, cyclic codes, and Hamming, Golay and Reed-Muller codes. It contains not only straight maths, but also