

Book Announcements

SHINNERS, S. M., *Modern Control System Theory and Design*, Wiley, New York, 1992, 855 pages, \$75.00.

Purpose: This book presents a unified treatment of conventional and modern control theory and design. It should be useful for the practicing engineer as well as senior-level students.

Contents: General concepts; mathematical techniques; state space and transfer function representations; second-order systems; performance criteria; stability; compensation and design; nonlinear feedback design; optimal control theory; digital control system analysis and design; case studies.

BOYD, S. P., and BARRATT, H. B., *Linear Controller Design: Limits of Performance*, Prentice-Hall, Englewood Cliffs, NJ, 1991, 416 pages.

Purpose: This book is concerned with the formulation of the linear controller design problem and the computation of the performance limits. Linear controller design problems are cast as convex optimization problems. It is meant for graduate students and practicing engineers.

Contents: Control engineering and controller design; a framework for controller design; analytical tools; design specifications; numerical methods.

LATOMBE, J.-C., *Robot Motion Planning*, Kluwer Academic, Norwell, MA, 1991, 672 pages.

Purpose: This book treats robot motion planning based on the concept of configuration space.

Contents: Configuration space of a rigid body; obstacles; roadmap methods; exact and approximate cell decomposition; potential field methods; multiple moving objects; kinematic constraints; dealing with uncertainty; movable objects.

CHUI, C. K., (ed.), *Wavelets: A Tutorial in Theory and Applications*, Academic Press, San Diego, CA, 1992, 724 pages.

Purpose: This is a second volume in the series Wavelet Analysis and Its Applications. It contains twenty-two chapters.

Contents: Orthogonal wavelets; wavelet-like local bases; multivariate scaling functions and wavelets; short-time Fourier and Window-Radon transforms; sampling theory and interpolation; applications to numerical analysis and signal processing.

PARKIN, R. E., *Applied Robotic Analysis*, Prentice-Hall, Englewood Cliffs, NJ, 1991, 448 pages.

Purpose: This book treats the path design and control of robots.

Contents: Relationship of vectors, points, lines, planes, spheres, and circles; movement and imaging; joint specification and robotic classification; robotic capability; forward kinematic solutions; inverse kinematic solutions; parametric description of curves; path control; dynamics; actuators and their control.

AMIROUCHE, F. M. L., *Computational Methods in Multibody Dynamics*, Prentice-Hall, Englewood Cliffs, NJ, 1992, 478 pages.

Purpose: This book treats multibody dynamics of tree topology with open and closed loops.

Contents: Rigid-body and multibody kinematics; modeling of forces, equations of motion; handling constraints; linearization and vibration analysis; terminal flexible links; multiple flexible bodies; numerical stability of constrained multibody systems.