

Book Announcements

SONTAG, E. D., *Mathematical Control Theory*, Springer-Verlag, New York, 1990, 396 pages.

Purpose: This book deals with basic concepts and results of mathematical control and system theory pertaining to deterministic finite dimensional systems.

Contents: Systems; reachability and controllability; feedback and stabilization; outputs; observers and dynamic feedback; optimal control.

NIJMEIJER, H., and VAN DER SCHAFT, A. J., *Nonlinear Dynamical Control Systems*, Springer-Verlag, New York, 1990, 467 pages.

Purpose: This book deals with the differential geometric approach to nonlinear control.

Contents: Manifolds, vector fields, Lie brackets, and distributions; controllability and observability; local decompositions; input-output representations; state-space transformation and feedback; feedback linearization of nonlinear systems; controlled invariant distribution and the disturbance decoupling problem; input-output decoupling problem, geometric considerations; local stability and stabilization of nonlinear systems; controlled invariant submanifolds and nonlinear zero dynamics; mechanical nonlinear control systems; controlled invariance and decoupling for general nonlinear systems; discrete-time nonlinear control systems.

RULLE, D., *Elements of Differential Dynamics and Bifurcation Theory*, Academic, 1989, 187 pages.

Purpose: This monograph provides an introductory treatment of differential dynamics, with emphasis on bifurcation theory.

Contents: Differential dynamic systems; bifurcations.

MUSTAFA, D., and GLOVER, K., *Minimum Entropy H_∞ Control*, Lecture Notes in Control and Information Sciences, Vol. 146, Springer-Verlag, Berlin, 1990, 144 pages.

Purpose: This monograph deals with the design of controllers which effect particular closed-loop transfer functions by making them have H_∞ -norm less than some prescribed tolerance.

Contents: The entropy of a system; minimum entropy H_∞ control problem; minimum entropy H_∞ distance problem; relations to combined H_∞ /LQG control; relations to risk-sensitive LQG control; Normalized H_∞ control problem; H_∞ -characteristic values; LQG and H_∞ monotonicity.

ODETTE, L. L., *Intelligent Embedded Systems*, Addison-Wesley, 1991, 265 pages.

Purpose: This book deals with the techniques that are useful for building expert systems designed for embedded applications, primarily on dedicated hardware platforms.

Contents: Technologies of representation and reasoning; virtual machines; production systems; logic systems; virtual machines in hardware; examples and future directions.