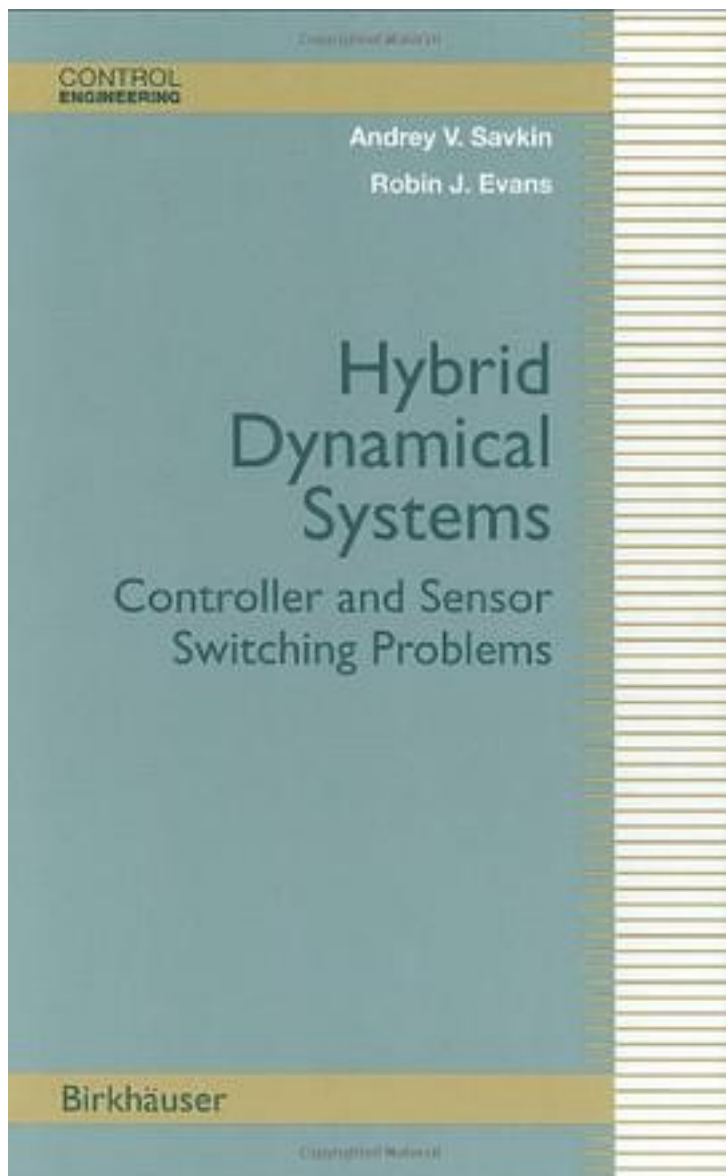# Hybrid Dynamical Systems

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The area of hybrid dynamical systems (HDS) represents a difficult and exciting challenge to control engineers and is referred to as 'the control theory of tomorrow' because of its future potential for solving problems. This relatively new discipline bridges control engineering, mathematics, and computer science. There is now an emerging literature on this topic describing a number of mathematical models, heuristic algorithms, and stability criteria. However, presently there is no systematic theory of HDS. "Hybrid Dynamical Systems" focuses on a comprehensive development of HDS theory and integrates results established by the authors. The work is a self-contained informative text/reference, covering several theoretically interesting and practically significant problems concerning the use of switched controllers and examining the sensor scheduling problem. The emphasis is on classes of uncertain systems as models for HDS. The book: focuses on the design of robust HDS in a logical and clear manner; applies the hybrid control systems framework to two classical robust control problems: design of an optimal stable controller for a linear system and simultaneous stabilization of a collection of plants; presents a detailed treatment of stability and H-infinity control problems for a class of HDS; and, covers recent original results with complete mathematically rigorous proofs. Researchers and postgraduate students in control engineering, applied mathematics, and theoretical computer science will find this book helpful. The book covers the latest results on this important area of research. Advanced engineering practitioners and applied researchers working in areas of control engineering, signal processing, communications, and fault detection will find this book an up-to-date resource.

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