Book review:

CONTROL AND CHAOS
by
Kevin Judd, Alistair Mees, Kok Lay Teo, Thomas L. Vincent, Editors

The book was published by Birkhäuser (Boston), as volume No. 8 in the series "Mathematical Modeling". It contains the proceedings of the US-Australian workshop on Control and Chaos held in Honolulu, Hawaii from 29 June to 1 July, 1995.

The objective of the workshop was to bring together experts in dynamical systems theory and control theory, and in their applications, in order to focus on the problems of controlling the nonlinear and potentially chaotic systems using limited control effort. Several new methods were presented, and many direct applications of the methods were discussed, including mechanical and electrical systems to be controlled, or ecosystems and other biosystems to be managed.

The volume contains twenty papers grouped in three parts:

1. Understanding Complex Dynamics

Triangulating Noisy Dynamical Systems *by Stuart Allie, Alistair Mees, Kevin Judd, Dave Watson*

Attractor Reconstruction and Control Using Interspike Intervals *by Tim Sauer*

Modeling Chaos from Experimental Data *by Kevin Judd, Alistair Mees*

Chaos in Symplectic Discretization of the Pendulum and Sine-Gordon Equations *by B.M.Herbst, C.M.Schober*

Collapsing Effects in Computation of Dynamical Systems *by Phil Diamond, Peter Kloeden, Aleksej Pokrovskii*

Bifurcations in the Falkner-Skan Equation *by Colin Sparrow*

Some Characterisations of Low-dimensional Dynamical Systems with Time-reversal Symmetry *by John A.G.Roberts*

2. Controlling Complex Systems

Control of Chaos by Means of Embedded Unstable Periodic Orbits *by Edward Ott, Brian R.Hunt*

Notch Filter Feedback Control for k-Period Motion in a Chaotic System *by Walter J Grantham, Amit M Athalye*

Targeting and Control of Chaos *by Eric J.Kostelich, Ernest Batetto*

Adaptive Nonlinear Control: A Lyapunov Approach *by Petar V.Kokotović, Miroslav Krstić*

Creating and Targeting Periodic Orbits *by Kathryn Glass, Michael Renton, Kevin Judd, Alistair Mees*

Dynamical Systems, Optimization, and Chaos *by John B.Moore*

Combined Controls for Noisy Chaotic Systems *by Mirko Paskota, Kok Lay Teo, Alistair Mees*

Complex Dynamics in Adaptive Systems *by Iven M.Y.Mareels*

Hitting Times to a Target for the Baker's Map *by Arthur Mazer*

3. Applications

Conrollable Targets Near a Chaotic Attractor *by Thomas L. Vincent*

The Dynamics of Evolutionary Stable Strategies *by Yosef Cohen, Thomas L. Vincent*

Nitrogen Cycling and the Control of Chaos in a Boreal Forest Model *by John Pastor, Yosef Cohen*

Self-organization Dynamics in Chaotic Neural Networks *by Masataka Watanabe, Kazuyuki Aihara, Shunsuke Kondo*

Part I contains papers dealing with reconstruction, numerics, and behavior of selected chaotic systems. It is primarily a theoretical part, rather weakly connected with the other two parts. Part II deals with controlling complex systems by means of embedding unstable periodic orbits, targeting, filtering, optimization and adaptive methods. Over the past decade it has been one of the most intensively studied problems (see the special issues of *IEEE Trans. Circuit and Systems* I, Oct./Nov. 1993, and Oct. 1997). Part III contains four applications papers including the control of a bouncing ball, evolutionary stability, chaos in ecosystems, and neural networks.

Each year several similar workshops dedicated to application of chaotic dynamics are organized, and then the proceedings containing usually short communications are published. This volume contains extensive papers which were written after the workshop so that the authors could take into account the workshop discussions, and relate their work to the other presentations. The valuable part of this volume is constituted by the comments of participants of the workshop which are enclosed at the end of each paper.

The papers are generally well written and the book is well edited.

<div align="right">Jacek Kudrewicz</div>