

Contents

Part I Theory of System Identification

1	How Accurate Can Instrumental Variable Models Become?	3
	Torsten Söderström	
2	Refined Instrumental Variable Methods for Hammerstein Box-Jenkins Models	27
	Vincent Laurain, Marion Gilson, and Hugues Garnier	
3	Identifiability, and Beyond	49
	Eric Walter	
4	Model Structure Identification and the Growth of Knowledge	69
	M.B. Beck, Z. Lin, and J.D. Stigter	
5	Application of Minimum Distortion Filtering to Identification of Linear Systems Having Non-uniform Sampling Period	97
	Graham C. Goodwin and Mauricio G. Cea	
6	Averaging Analysis of Adaptive Algorithms Made Simple	115
	Victor Solo	
7	Graphs for Dependence and Causality in Multivariate Time Series .	133
	Christoph Flamm, Ulrike Kalliauer, Manfred Deistler, Markus Waser, and Andreas Graef	
8	Box-Jenkins Seasonal Models	153
	Granville Tunnicliffe Wilson and Peter Armitage	
9	State Dependent Regressions: From Sensitivity Analysis to Meta-modeling	171
	Marco Ratto and Andrea Pagano	

10	Multi-state Dependent Parameter Model Identification and Estimation	191
	Włodek Tych, Jafar Sadeghi, Paul J. Smith, Arun Chotai, and C. James Taylor	
11	On Application of State Dependent Parameter Models in Electrical Demand Forecast	211
	Nguyen-Vu Truong and Liuping Wang	
12	Automatic Selection for Non-linear Models	229
	Jennifer L. Castle and David F. Hendry	
13	Construction of Radial Basis Function Networks with Diversified Topologies	251
	X. Hong, S. Chen, and C.J. Harris	
 Part II Applications of System Identification		
14	Application of Filtering Methods for Removal of Resuscitation Artifacts from Human ECG Signals	273
	Ivan Markovsky, Anton Amann, and Sabine Van Huffel	
15	Progress and Open Questions in the Identification of Electrically Stimulated Human Muscle for Stroke Rehabilitation	293
	Fengmin Le, Chris T. Freeman, Ivan Markovsky, and Eric Rogers	
 Part III Data-Based Mechanistic Modelling and Environmental Systems		
16	Data-Based Mechanistic Modelling: Natural Philosophy Revisited?	321
	Peter C. Young	
17	Identification and Representation of State Dependent Non-linearities in Flood Forecasting Using the DBM Methodology	341
	Keith Beven, Dave Leedal, Paul Smith, and Peter Young	
18	Transport and Dispersion in Large Rivers: Application of the Aggregated Dead Zone Model	367
	Sarka Blazkova, Keith Beven, and Paul Smith	
19	Stochastic and Robust Control of Water Resource Systems: Concepts, Methods and Applications	383
	Andrea Castelletti, Francesca Pianosi, and Rodolfo Soncini-Sessa	
20	Real-Time Optimal Control of River Basin Networks	403
	R. Evans, L. Li, I. Mareels, N. Okello, M. Pham, W. Qiu, and S.K. Saleem	
21	Modelling of Rivers for Control Design	423
	Mathias Foo, Su Ki Ooi, and Erik Weyer	

22	Modelling Environmental Change: Quantification of Impacts of Land Use and Land Management Change on UK Flood Risk	449
	H.S. Wheeler, C. Ballard, N. Bulygina, N. McIntyre, and B.M. Jackson	
23	Hydrological Catchment Classification Using a Data-Based Mechanistic Strategy	483
	Thorsten Wagener and Neil McIntyre	
24	Application of Optimal Nonstationary Time Series Analysis to Water Quality Data and Pollutant Transport Modelling	501
	Renata Romanowicz	
25	Input-Output Analysis of Phloem Partitioning Within Higher Plants	519
	Peter E.H. Minchin	
26	Chaos Theory for Modeling Environmental Systems: Philosophy and Pragmatism	533
	Bellie Sivakumar	
Part IV Control System Design		
27	Linear and Nonlinear Non-minimal State Space Control System Design	559
	James Taylor, Arun Chotai, and Wlodek Tych	
28	Simulation Model Emulation in Control System Design	583
	C.X. Lu, N.W. Rees, and P.C. Young	
29	Predictive Control of a Three-Phase Regenerative PWM Converter .	599
	Dae Keun Yoo, Liuping Wang, and Peter Gawthrop	
30	SSpace: A Flexible and General State Space Toolbox for MATLAB .	615
	Diego J. Pedregal and C. James Taylor	
	Index	637

System Identification, Environmental Modelling, and
Control System Design

Wang, L.; Garnier, H. (Eds.)

2012, XXVIII, 648 p., Hardcover

ISBN: 978-0-85729-973-4