Nonlinear and Adaptive Control

Tools and Algorithms for the User

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PREFACE

This book contains some of the main scientific contributions resulting from the research activities undertaken within the framework of the TMR Network “Nonlinear and adaptive control: tools and algorithms for the user” (NACO2, Contract Number HPRN-CT-1999-00046, www.ee.ic.ac.uk/naco2).

The support of the European Commission is gratefully acknowledged, and it is fair to say that without such support the research results reported in this book would have been only partly developed.

As already stated, the book contains a collection of diverse scientific results, ranging from purely theoretical results to engineering applications. This demonstrates the wide spectrum of activities undertaken within the NACO2 project and shows, once more, that nonlinear and adaptive control are located at the crossroads between mathematics and engineering and, as such, contribute to the development of such disciplines.

All chapters of the book either involve researchers from two or more nodes of the network (and other international researchers) or involve young researchers (G. Blankenstein, P. Castillo, H. DeBattista, A. de Rinaldis, P. Garcia, F. Grogard, G. Kaliora, D. Karagiannis, S. Velut) supported by the network. This highlights two main features of the NACO2 network: the importance of international collaborations and the high quality of training provided to the young researchers that have participated in the NACO2 programme.

The book is *ideally* divided into two parts. In the first (Chapters 1 to 4) recent results on the theory of nonlinear and adaptive control are presented. The second (Chapters 5 to 10) presents applications of nonlinear and adaptive control tools to engineering problems, ranging from mechanical engineering (Chapter 5, 6 and 7), to bioengineering (Chapters 8 and 9), to power engineering (Chapter 10). Notably, experimental results are reported in Chapters 6, 8 and 9.

I wish to thank all contributors to this book, and all researchers that have made the NACO2 programme an excellent and stimulating research adventure that, together with Prof. D.Q. Mayne, I had the honour to co-ordinate. I also wish to thank D. Karagiannis for his help in correcting the manuscript.

A. Astolfi
London

CONTENTS

1 Observer-Based Solution to the Strictly Positive Real Problem	
J. Collado, R. Lozano and R. Johansson	1
1 Introduction	1
2 Preliminaries	3
3 Stable Case	4
4 Unstable Case	8
5 Illustrative Examples	10
6 Concluding Remarks	16
Bibliography	17
 2 Nonlinear Control of Feedforward Systems	
G. Kaliora and A. Astolfi	19
1 Introduction	19
2 A Motivating Result and Problem Formulation	23
3 Two Useful Lemmas	28
4 Stabilization with Bounded Partial State Feedback	32
5 Stabilization with Sensors Saturations	38
6 Applications	41
6.1 Stabilization of a chain of integrators with bounded control revisited	41
6.2 Asymptotic stabilizability by control of constant sign	45
6.3 Asymptotic stabilization of the TORA	46
6.4 Stabilization of underactuated ships on a linear course	48
7 Conclusions	50
Bibliography	51
 3 Output Feedback Stabilization of a Class of Uncertain Systems	
D. Karagiannis, A. Astolfi and R. Ortega	55
1 Introduction	55
2 Problem Description	57
3 Output Feedback Stabilization	58
3.1 Reduced-order observer design	58
3.2 Small-gain condition	61

4	Special Cases	64
4.1	Systems without zero dynamics	65
4.2	Systems with ISS zero dynamics	65
4.3	Unperturbed systems	66
4.4	Linear perturbed systems	66
5	Examples	68
5.1	A nonminimum-phase system	68
5.2	Output feedback stabilization of a nonlinear benchmark system . .	70
6	Conclusions	74
	Bibliography	76
4	Matching in the Method of Controlled Lagrangians and IDA-Passivity Based Control	
	G. Blankenstein, R. Ortega and A. J. van der Schaft	79
1	Introduction	79
1.1	Controlled Lagrangians	80
1.2	Interconnection and damping assignment	82
1.3	Contributions and outline of the chapter	83
2	Matching of Euler-Lagrange Systems	84
2.1	General matching conditions	84
2.2	Mechanical systems	87
2.3	Mechanical systems with symmetry	90
2.4	The cart and pendulum	96
3	Matching of Port-Controlled Hamiltonian Systems	98
3.1	General matching conditions	98
3.2	Mechanical systems	100
4	Comparison Between the Two Methods	102
4.1	The controlled Lagrangians case of IDA-PBC	102
4.2	The λ -method for Hamiltonian matching	105
5	Integrability	108
5.1	Integrability of the structure matrix	108
5.2	Gyroscopic terms	109
5.3	Integrability and matching	110
6	Conclusions	111
	Bibliography	113
5	Virtual Constraints for the Orbital Stabilization of the Pendubot	
	F. Grogard and C. Canudas de Wit	115
1	Introduction	115
2	Oscillations in Cascade Systems	117
2.1	Attractive limit sets in cascade systems	117
2.2	Neutrally stable oscillations in cascade systems	122
3	Oscillations in the Plane	123

4	Control of the Pendubot	130
4.1	Sufficient conditions for oscillations	132
4.2	Oscillations shaping	133
4.3	Linear output	134
5	Controlled Oscillations	138
5.1	Specifications	139
5.2	Control design	139
5.3	Simulations	143
6	Conclusion	143
	Bibliography	145
6	Nonlinear Control of a Small Four-Rotor Rotorcraft	
	P. Castillo, R. Lozano, P. Garcia and P. Albertos	147
1	Introduction	147
2	Nonlinear Control of the PVTOL Aircraft	150
2.1	Dynamic model	150
2.2	Control of the vertical displacement	151
2.3	Control of the roll angle and the horizontal displacement	152
2.4	Simulation results	156
3	Discrete-Time Controller for Continuous-Time Systems with Delay	158
3.1	Problem formulation	159
3.2	d-step ahead prediction scheme	160
3.3	Prediction-based state feedback control	161
3.4	Stability of the closed-loop system	163
4	Experimental Results	164
4.1	Experimental platform for the roll control	164
4.2	Experiment and controller parameters tuning	166
4.3	Comments	167
4.4	Experimental control based on state prediction	168
5	Conclusion	175
	Bibliography	175
7	Global Attitude Control of Spacecraft Using Magnetic Actuators	
	A. Astolfi and M. Lovera	179
1	Introduction	179
2	Mathematical Model of a Magnetically Actuated Satellite	181
3	Magnetic Attitude Control for Inertially Pointing Satellites	185
3.1	State feedback stabilization	185
3.2	Stabilization without rate feedback	189
4	Magnetic Attitude Control for Earth Pointing Satellites	192
4.1	Mathematical model	192
4.2	State feedback control	193
5	Simulation Results	196

5.1	Inertial pointing	196
5.2	Earth pointing	198
6	Conclusions	199
	Bibliography	199
8	Control of Fed-Batch Bioreactors. Part I	
	J. Picó, E. Picó-Marco, J. L. Navarro and H. DeBattista	207
1	Introduction	207
2	Models	209
2.1	Introduction	209
2.2	Standard models	210
2.3	Kinetic functions	213
2.4	Sources of uncertainty	214
2.5	Production modes	215
3	Control Specifications	216
4	Invariant Control	217
4.1	Partial state feedback control and goal manifold	217
4.2	Invariance	219
4.3	Stability	220
5	Dealing with Uncertainties	222
5.1	Introduction	222
5.2	Specific growth rate error feedback	224
5.3	Robust adaptation of the partial state feedback gain	225
6	Results	230
6.1	Simulation Results	230
6.2	Experimental results	233
7	Conclusions and Outlook	235
	Bibliography	235
9	Control of Fed-Batch Bioreactors. Part II	
	S. Velut and P. Hagander	239
1	Introduction	239
2	Process Description	240
2.1	Stirred bioreactor	240
2.2	Mass balances and metabolic relations	241
2.3	Linearization	241
3	Probing Control	242
3.1	Control problem	242
3.2	Probing control	242
4	Closed-Loop System Representation	243
5	Tools for Global Analysis	247
5.1	Stability analysis	247
5.2	Performance analysis	250

6	Case Study	251
6.1	Simulations	252
6.2	Local analysis	253
6.3	Global analysis	255
7	Input Versus Output Dynamics	258
8	Experimental Results	261
9	Conclusion	262
	Bibliography	262
10	A Compensator Design Framework for Attenuation of Wave Reflections in Long Cable Actuator-Plant Interconnections	
	A. de Rinaldis, R. Ortega and M. W. Spong	267
1	Introduction	267
2	Systems Configuration and Limitations of Current Practice	270
2.1	System model	270
2.2	Limitations of impedance matching	271
2.3	Limitations of RLC LTI filtering	272
3	Two Motivating Examples	273
3.1	Microwave heating	273
3.2	Overvoltage in AC electrical drives	275
4	Scattering Representation	277
5	Compensator Design Problem	278
5.1	Problem formulation	279
5.2	An ideal full-decoupling compensator	279
6	Discrete-Time Representation and Well-Posedness Analysis	282
7	A Class of Provably Stable Compensators	286
7.1	Motivations	286
7.2	Properness conditions	286
7.3	Well-posedness conditions	288
7.4	Stability conditions	289
7.5	Main result	291
8	Adaptive Compensators	292
9	Simulation Results	294
10	Conclusions and Outlook	294
	Bibliography	298