



# automatica

A Journal of **IFAC** the International  
Federation of Automatic Control

Volume 36 Number 1

January 2000

## CONTENTS

### EDITORIAL

- P. Young 1 Obituary Professor John Flavell Coales

### REGULAR PAPERS

- G.J. Kulawski and M.A. Brdyś 5 Stable adaptive control with recurrent networks  
H. Zhang, A. Ray and S. Phoha 23 Hybrid life-extending control of mechanical systems: experimental validation of the concept

### BRIEF PAPERS

- L. Scibile and B. Kouvaritakis 37 Stability region for a class of open-loop unstable linear systems: theory and application  
P.D. Christofides 45 Robust output feedback control of nonlinear singularly perturbed systems  
T. Söderström and M. Mossberg 53 Performance evaluation of methods for identifying continuous-time autoregressive processes  
J.-X. Xu and Y. Song 61 Multi-scale direct learning control of linear time-varying high-order systems  
P. Kallappa and A. Ray 69 Fuzzy wide-range control of fossil power plants for life extension and robust performance  
P.M. Mäkilä 83 Linear quadratic control revisited  
J.-X. Xu and B. Viswanathan 91 Adaptive robust iterative learning control with dead zone scheme  
M. Basseville, M. Abdelghani and A. Benveniste 101 Subspace-based fault detection algorithms for vibration monitoring

### TECHNICAL COMMUNIQUE

- P.S.V. Nataraj and G. Sardar 111 Template generation for continuous transfer functions using interval analysis  
E.-W. Bai and Z. Ding 121 Zeros of sampled data systems represented by FIR models  
A. Casavola, M. Giannelli and E. Mosca 125 Min-max predictive control strategies for input-saturated polytopic uncertain systems  
J. Engwerda 135 Feedback Nash equilibria in the scalar infinite horizon LQ-game



*Continued from outside front cover*

W.-J. Wang and K.-Y. Chang	141	<b>Variable structure-based covariance assignment for stochastic multivariable model reference systems</b>
Y.-G. Wang and H.-H. Shao	147	<b>Optimal tuning for PI controller</b>
J.F. Dunne	153	<b>An explicit control energy function for optimal suppression in linear systems</b>
S. Xie and L. Xie	161	<b>Stabilization of a class of uncertain large-scale stochastic systems with time delays</b>
<b>CORRESPONDENCE</b>		
M.J. Chappell and K.R. Godfrey	169	<b>Reply to "Some remarks about an identifiability result of nonlinear systems"</b>
L. Denis-Vidal and G. Joly-Blanchard	171	<b>Authors' Reply</b>
D.J. Leith and W.E. Leithead	173	<b>Further comments on gain scheduling dynamic linear controllers for a nonlinear plant</b>
<b>BOOK REVIEW</b>		
D. Mishne	175	<b>Spacecraft Navigation and Guidance, Advances in Industrial Control by M. Noton</b>

INDEXED/ABSTRACTED IN: *Appl. Mech. Rev., Curr. Cont. ASCA, Aqua. Abstr., Cam. Sci. Abstr., Curr. Cont. CompuMath., Curr. Cont./Eng. Tech. & Applied Sci., Comput. Cont., Eng. Ind., INSPEC Data., Info. Sci. Abstr., Math. R., Oper. Res. Manage. Sci., PASCAL-CNRS Data., Curr. Cont. Sci. Cit. Ind., Curr. Cont. SCISEARCH Data., SSSA/CISA/ECA/ISMEC, Zentralblatt für Mathematik*