

CONTENTS

Preface	v
Section 1	
PLENARY SURVEY PAPER	
Knowledge-Based Models and Methods in Manufacturing S. Tzafestas	3
Section 2	
MODELLING, ESTIMATION AND SIMULATION	
Modelling and Simulation: Issues and Perspectives in Education A.K. Sahraoui	19
Algorithms for the Study of Structural Properties on Bond-Graph Models C. Sueur, G. Dauphin-Tanguy	25
Modelling for Flexible Mechanical Systems O. Matsushita, H. Bleuler, T. Sugaya	33
Mathematical Model of the Developable Plow Bottom Surface Z.N. Gorbatovich	39
On Linear Beck's Problem with Internal Damping: Control Theoretic Approach via Semigroup Method K. Ito, N. Kunimatsu	45
Robustness of MIMO Systems: Modelling and Simulation I. Jaworska, W. Koziński	51
A Syntactic Method for Piecewise Linear Approximation G. Stamatopoulos, G. Papakonstantinou	57
A Topological Approach to Space-Time Modelling C. Cattani, A. Paoluzzi	61

An Iterative Method of Determining Parameters for a Double Porosity Medium System Chow Chen-yu, Wang Kangning	67
Some Diffusion Model of a Neuron with Refraction and its Identification L. Dąbrowski, A. Pacut	73
On the Optimization of the Output Operator for Discrete Time Kalman Filtering L. Carotenuto, P. Muraca, G. Raiconi	79
An Internal Model Control Version of Generalized Minimum Variance Control for Multivariable Processes D. Meizel, S. Aksas, M. Greenhill	85
Robust Estimation and Exact Uncertainty Intervals Evaluation for Nonlinear Models M. Milanese, A. Vicino	91
Reliability Estimates for Regenerative Models V.V. Kalashnikov	97
Evaluation of a Performability Model with Extended Queueing Networks H. Szczerbicka	101
Software Package for Real-Time Simulation of Non-Linear Quadratic Gaussian Adaptive Control System A. Dzieliński	107
Test Sequence Evaluation for Complex Integrated Circuits M. Abid, J.C. Geffroy, G. Motet, P. Vergez	113
Performance Evaluation of Nonlinear Programming Codes for Simulation of Engineering Problems on Vector Processors L. Grandinetti, D. Conforti	119
Computer Implementation of VCVS Active Filters S.A. Pactitis, A.T. Kossidas	123
Modelling the Thickness of Articles Extruded from Elastoviscous Materials L.M. Davidovich, I.F. Kuzmitsky	131
Section 3 STABILITY, OPTIMIZATION AND CONTROL	
Recent New Results in the Stability Analysis and Feedback Design of Two-Dimensional Systems S. Tzafestas, T. Pimenides, N. Theodorou, A. Kossidas, A. Kanellakis	137

Stability and Invariance Conditions in Generalized Predictive Control J.-P. Beziat, J.-C. Hennet	149
Sensitivity Minimization by Using an Extended Parametrization of All Stabilizing Compensators G. Celentano, G. De Maria	155
Decomposition of 2-D Systems into 1-D Systems in Time and Frequency Domains T. Kaczorek	161
On the Role of Constants Precompensators in Diagonalization Problems V. Eldem, A.B. Özgüler	167
A Construction of an Optimal and Suboptimal Control Based on Pole Region Assignments N. Kawasaki, H. Kobayashi, S. Ishijima, E. Shimemura	173
On the Phase-Portrait Method for a Control Dynamic System A.G. Butkovskiy, N.L. Lepe, A.V. Babichev	179
A New Scheme of Adaptive Control Lu Boying	185
Model Reduction and Control of Periodical Time Varying Systems J.-P. Richard, P. Conze	191
On the Implementation of Variable Structure Control Systems A. Balestrino, G. Gallanti, D. Kalas	195
Reduced-Order Controllers for Active Suspension of Vehicles with Flexible Body G. Capitani, M. Tibaldi	201
Section 4 MODELLING AND CONTROL OF ROBOTIC AND MANUFACTURING SYSTEMS	
Combined Euler-Lagrange/Newton-Euler Robot Modelling and Identification G. Stavrakakis, A. Zagorianos, S. Tzafestas	209
The Use of Kane's Method in the Modelling and Simulation of Robotic Systems R.L. Huston	221
Using Symbolic Methods in Robotics: Inverse Kinematics and Collision Problems S. Stifter, B. Kutzler	229
An Approach to Cartesian Trajectories Generation for Industrial Robots C. Cerrada, V. Feliu	235

Modified Computed Torque Method for Flexible Robot Control J.-M. Renders, M. Becquet, R. Hanus	239
Elaboration of the Control Set Values for the Actuators of a Robot by Graphical Learning and Simulation on a Personal Computer H. Jonca, C. Sarramea, P. Lopez	245
Modelling and Simulation of the Flow Line Installation Module of an Off-Shore Robotic System: Practical Implementation on a Personal Computer Aimed to the Synthesis of an Adaptive Controller G. Bigoni, T. Leo, S. Longhi, A. Piersanti	251
Modular Serial Parallel Redundant Robot S. Charentus, C. Diaz, M. Renaud	257
Interfacing CAD-CAM for the Robotized Insertion of Electronic Components. Graphic Simulation M.C. Turgne, A. Sicard, P. Lopez	265
Modelling of Robot Workcells for a Programming and Simulation System F. Dai	275
Modelling and Simulation of Complex Manufacturing Cells D.W. Wloka	281
A LISP-Based Stochastic Petri Net Simulation Environment J.P. Nolan, G.M. Lane, J.M. Fegan	287
Petri-Nets and Artificial Intelligence in the Context of Simulation and Modelling of Manufacturing Systems E. Castelain, J.-C. Gentina	297
On PN Based Tools for Parallel Processes Simulation A. Di Stefano, O. Mirabella	303
"GRAMAN": A Graphic System for Manufacturing System Design J.L. Villarroel, J. Martínez, M. Silva	311
Modelling and "Just-in-time" Control in Computer Integrated Manufacturing E.B. Frolov	317
Section 5 APPLICATIONS OF MODELLING AND SIMULATION	
A Systemic Approach for Knowledge-Base Development in Industrial Environments J. Maroldt	325

Discrete Event Simulation for a Class of Local Area Tree Networks S. Marano, A. Volpentesta	331
Optimal Flow Control of a General End-to-End Packet-Switched Network D.D. Kouvatsos, A.T. Othman	339
Ship Design Parameters' Optimization Computer System ZI. Alexiev, N. Nikolov	345
Modelling and Model Reduction of Solar Collectors S. El Massah, H.-J. Nern, H.A. Nour Eldin	349
Multivariable Pole Placement Adaptive Control of a Fermentation Process B. Dahhou	355
Dynamic Behaviour of Potato Drying Process D. Salemović, D. Lj. Debeljković	361
A Method of Map Generation and Guidance Control for Suspended Gondola-Rope System Using Ultrasonic Sensor Array T. Fukuda, S. Ishijima	367
Simulation of the Enhanced Oil Recovery Process as a Moving Boundary Problem S. Grochmal	373
An Overview on System Modelling and Simulation in Cement Industry A.M. Bassiuny, H.A. Nour Eldin, A.A. Hegazy	379
Self-Tuning Control of a Feeder for Blown-Glass Plants P. Borodani, D. Carlucci, G. Fiorio	385
Modelling Steady State Kinetics of Bireactant Enzymes B. Jammes, J.P. Babary	391
Time Delay in Mathematical Modeling and Simulation of Biological Systems V.A. Spasić	397
"SPARTA" (Spare Parts Adviser): An Expert System for Spares Inventory Control D. Petrović, R. Petrović	403
Economic Modelling Paradigms: General Equilibrium vs. Keynesian P. Capros, P. Karadeloglou, G. Mentzas	409
Shortest Path Reformulation of the Aggregate Multi-Line Uncapacitated Lot-Size Scheduling Problem E. Toczyłowski, K.S. Hindi	417

A Generalized Model to Simulate Urgent Hospital Departments C. Bressan, P. Facchin, G. Romanin Jacur	421
Determination of Angular Velocity, Magnetic Fluxes and Phase Resistances of a Squirrel Cage Motor on the Basis of Real Time Measurements of Stator's Voltages and Currents K. Czernek, W. Koczara, Z. Szulc	427
Author Index	435