

Contents

Invited Lectures

Trust Regions and Projected Gradients J.J. MORE.....	1
How to Cope with Grey Part of Management - System Modelling and Optimization in Japanese Industry H. KARATSU.....	14
Optimal Control Discrete-Time Systems J. DOLEZAL.....	22
Control Problems under Insufficient Information Y.S. OSIPOV.....	29

Control and Estimation

Application of Optimization-Based Methods in Control System Design.....	52
Modelling Support System for System Dynamics.....	60
Stability and Control of Linear Periodic Systems.....	70
On Stochastic Control Problems: An Algorithm for the Value Function and the Optimal Policy - Some Applications.....	80
Solving SLP Recourse Problems: The Case of Stochastic Technology Matrix, RHS & Objective.....	90
Optimal Input for Autoregressive Model Discrimination Based on the Kullback's Divergence.....	101
Identification of Linear Discrete-Time Stochastic System Using Covariance Information.....	109
Optimum State Estimation Using a New Class of Robust Doubly Optimized Recursive Estimators.....	119
Chandrasekahr Filtering and Smoothing Methods Given Covariance Model and Properties of X and Y Function.....	129
New Approach to Image Modelling with Application to Restoration Problems.....	139

Continuous Estimation

Higher Order Sensitivity of Solutions to Convex Programming Problems without Strict Complementarity.....	148
Distributed Nonlinear Optimization Algorithms for General Network Problems.....	165
A Multiplex Algorithm for Linear Programming Problems.....	177
Newton-Type Algorithms with Nonmonotone Line Search for Large-Scale Unconstrained Optimization.....	187
Centered Newton Method for Mathematical Programming.....	197
Application of Generalized Raiffa Solution to Multicriteria Bargaining Support.....	207
Recent Results on Nondifferentiable Exact Penalty Functions.....	212
A Penalty Function Formulation for Interactive Multiobjective Programming Problems.....	221
Multicriteria Optimization in the DISO System.....	231

Distributed Parameter Systems

Sensitivity Analysis of a Descriptor Distributed Parameter System and its Application to Shape Optimization.....	241
Existence of an Optimal Domain in a Domain Optimization Problem Second Order Necessary Optimality Conditions for Domain Optimization Problem with a Neumann Problem.....	259
Optimal Sensor and Actuator Locations in Distributed Parameter Systems.....	269
Modelling of Flexible Manipulator Arms.....	277

Combinatorial Optimization

Column/Constraint Generation for Quadratic Assignment Problems.....	287
A Parallel Algorithm for the Machine Scheduling Problem.....	299
Optimal Tradeoff among Delay, Throughput and Fairness in Flow Controlled Networks.....	307
Distributed Computing of a Stochastic Algorithm for Combinatorial Optimization Problems.....	318
Hierarchical Simulated Annealing Optimization in Partition Problem	328
A Mixed Integer 0-1 Programming Heuristic for Resource Allocation in a Decentralized System.....	338

VIII

Computational Geometry

Symbolic Treatment of Geometric Degeneracies.....	348
A Space Efficient Algorithm for the Greedy Triangulation.....	359
On the Reachability Region of a Ladder in Two Convex Polygons.....	365
Computational Geometry with Restricted Orientations.....	375

Simulation

A Population-Type Model of Car Market Dynamics.....	385
Model for Blast Furnace On-Line Simulation.....	395
A Coverage Monte Carlo Method for Reliability Quantification.....	406

Modelling and Methodology in Social and Economic Systems

Transportation Investment and Dynamic Equilibrium in a Multiregional Input-Output System.....	416
Modelling and Optimization of Public Traffic Large Scale Systems...	426
Incentive Stackelberg Strategies in Linear Quadratic Differential Games with Two Noncooperative Followers.....	436
Stackelberg Game Model Incorporating Public Participation for Electric Generating System Development.....	446
Cooperative Fuzzy Game with Side-Payments.....	455
Dynamic Simulation and Optimal Control of Urban Socio-Economic and Eco-Environment System.....	462

Optimization and Reliability of Structural Systems

Application of Multicriteria Optimization to Structural Systems....	471
Application of Optimization Methods in Structural Systems Reliability Theory.....	484
Safety Assessment of Bridges During Construction.....	498
Conventional & Reliability Comparison Study of Various Designs of a Typical 2-Way R.C. Flat Slab Interior Panel.....	508

Energy Systems

Energy Optimization in Industrial Models.....	518
Discretization and Markov Modeling of a State Variable in Dynamic Programming.....	530
Power Generator Control by Variable Structure Control Theory.....	539
Automatic Generation Control in Hydro-Thermal Electric Power System.....	549
Stochastic Model for Optimal Gas Exploitation.....	558

Operational Research in Forestry

A Resource Planning and Management System for Pine Plantations in Fiji.....	565
A Stochastic Growth Model for Even-Aged Single-Species Forest Stands.....	574
Modelling Forest Mosaics.....	584
Forestry Applications of Operations Research.....	594

Biological Systems

Aggregation of Ecological Networks Based on Information Theory.....	604
Constrained Cross-Validation Applied to Estimation of Kinetic Parameters of Cell Populations in Perturbed Growth.....	614
On the Choice of Parameters in Mathematical Models of Immunological Tolerance.....	624
A Mathematical Model of Trophic Interaction of Biopopulations of Biological Systems.....	632

Industrial Applications

Optimal Planning for Operating a Production Process with a Buffer and an Electric Power Plant.....	643
Computer Aided Sawmill Design Evaluation.....	652
Online Application of Large Scale Linear Programming to Pulp and Paper Mill by Mini-Computer.....	662

Investigation and Optimization of Reliability of Transport Networks.....	672
An Optimal Solution of the Assembly Line Balancing Problem with the Balancing Index as a Primary Objective Function.....	681
Scheduling Flow-Shops with Parallel Machines and Finite In-Process Buffers by Multilevel Programming.....	691
Solution Methods of Plants Location Dynamic Problems in Continuous-Time.....	701

Computers

A Method of Congestion Control in the Computer Network Node.....	715
Program Optimization with Logic Program Transformation.....	725
The Sensitivity of Some Recognition Algorithms for Printed Arabic Characters.....	735
Analysis of a Time-Shared Central Server System with Heterogeneous Distributed Stations.....	744
Parallel Ray Tracing on a Cellular Array Processor.....	757
The FPS T Series Supercomputer.....	766
Appendix.....	776
Author Index.....	786