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3.5 Counter Propagation Neural (CPN) Network for Function Approximations3.6 Examples; 3.6.1 Example 1; 3.6.2 Example 2; 4 Fuzzy Genetic Algorithm for Optimization of Steel Structures; 4.1 Introduction; 4.2 Fuzzy Set Theory and Structural Optimization; 4.3 Minimum Weight Design of Axially Loaded Space Structures; 4.4 Fuzzy Membership Functions; 4.5 Fuzzy Augmented Lagrangian Genetic Algorithm; 4.6 Implementation and Examples; 4.6.1 Example 1; 4.6.2 Example 2; 4.7 Conclusion; 5 Fuzzy Discrete Multi-criteria Cost Optimization of Steel Structures; 5.1 Cost of a Steel Structure
5.2 Primary Contributing Factors to the Cost of a Steel Structure5.3 Fuzzy Discrete Multi-criteria Cost Optimization; 5.4 Membership Functions; 5.4.1 Membership Function for Minimum Cost; 5.4.2 Membership Function for Minimum Weight; 5.4.3 Membership Function for Minimum Number of Section Types; 5.5 Fuzzy Membership Functions for Criteria with Unequal Importance; 5.6 Pareto Optimality; 5.7 Selection of Commercially Available Discrete Shapes; 5.8 Implementation and a Parametric Study; 5.9 Application to High-Rise Steel Structures; 5.9.1 Example 1; 5.9.2 Example 2; 5.10 Concluding Comments
6 Parallel Computing

Sommario/riassunto

While the weight of a structure constitutes a significant part of the cost, a minimum weight design is not necessarily the minimum cost design. Little attention in structural optimization has been paid to the cost optimization problem, particularly of realistic three-dimensional structures. Cost optimization is becoming a priority in all civil engineering projects, and the concept of Life-Cycle Costing is penetrating design, manufacturing and construction organizations. In this groundbreaking book the authors present novel computational models for cost optimization of large scale, realistic