Table of Contents

Algorithms

Computation of the Hausdorff Distance Between Plane Vector Polylines
Jean-Francois Hangouët 1

An Algorithm for Generating Road Center-Lines from Road Rights-of-Way
Navan E. Olson 11

Pass Location to Facilitate the Direct Extraction of Warntz Networks from Grid Digital Elevation Models
David Wilcox and Harold Moellering 22

Cartography and Decision Making

A Case Study for Hypermedia Cartography: Radial Growth in Trembling Aspen at Waterton Lakes National Park
Christopher R. Weber, Barbara P. Buttenfield, and Dennis Jelinski 32

Intelligent Interactive Dynamic Maps
Suguru Ishizaki and Ishantha Lokuge 41

Cartographic Support for Collaborative Spatial Decision-Making
Marc P. Armstrong and Paul Densham 49

Cartographic Generalization

Measurement, Characterization and Classification for Automated Line Feature Generalization
Corinne Plazanet 59

Multiple Paradigms for Automating Map Generalization: Geometry, Topology, Hierarchical Partitioning and Local Triangulation
Anne Ruas 69

A New Approach to Subdivision Simplification
Marc de Berg, Marc van Kreveld, and Stefan Schirra 79

Visualization

Grass as an Integrated GIS and Visualization System for Spatio-Temporal Modeling
William M. Brown, Mark Astley, Terry Baker, and Helena Mitasova 89

Exploratory Data Visualization for Reliable Integration
Eva-Maria Stephan 100

Approaches to Truth in Geographic Visualization
Alan M. MacEachren 110

Spatial Data Representation

Handling Identities in Spatio-Temporal Databases
A.A. Roshannejad and W. Kainz 119

Representation of Continuous Fields
Andrej Včkovski 127

Building an OOGIS Prototype: Some Experiments with GEO_2
Laurent Raynal, Benoît David, and Guylaine Schorter 137

Implementation of Triangulated Quadtree Sequencing for a Global Relief Data Structure
Jaime A. Lugo and Keith C. Clarke 147

A Multi-scale DAG for Cartographic Objects
Sabine Timpf and Andrew Frank 157

System Design Issues

Improving the Performance of Raster GIS: A Comparison of Approaches to Parallelization of Cost Volume Algorithms
Daniel F. Wagner and Michael S. Scott 164

Constraint Based Modeling in a GIS: Road Design as a Case Study
Andrew U. Frank and Mark Wallace 177

Designing a Flexible Automated Mapping System for Meeting Unique Customer Requirements
Timothy Trainor and Frederick R. Broome 187

National and Organizational Cultures in Geographic System Design: A Tale of Two Counties
Francis Harvey 197

Evaluating User Requirements for a Digital Library Testbed
Barbara P. Buttenfield 207

Shared Databases and Formal Frameworks

Spatial Databases: Developing a Meaningful International Framework for Spatially Referenced Cultural and Demographic Data
Leslie Godwin 215

Transaction Management in Distributed Geographical Databases
Britt-Inger Nilsson 225

Semantic Net of Universal Elementary GIS Functions
Jochen Albrecht 235

Topology of Prototypical Spatial Relations Between Lines and Regions in English and Spanish
David M. Mark and Max J. Egenhofer 245

Data Quality I

Quality and Reliability in Representations of Soil Property Variations
Howard Veregin, Kate Beard, and Bheshem Ramlal 255

On Uncertainty in Geographic Databases Driving Regional Biogeochemical Models
Ferenc Csillag 264

Beyond Stevens: A Revised Approach to Measurement for Geographic Information
Nicholas R. Chrisman 271

Spatial Analysis

Map-Overlay within a Geographic Interaction Language
Vincent Schenkelaars and Peter van Oosterom 281

Visualization Support for Fuzzy Spatial Analysis
Bin Jiang, Ferjan Ormeling, and Wolfgang Kainz 291

On the Robustness of Qualitative Distance- and Direction-Reasoning
Jung-Hong Hong, Max Egenhofer, and Andrew U. Frank 301

Feature Placement and Data Efficiency

Automating Linear Text Placement within Dense Feature Networks
David H. Alexander and Carl S. Hantman 311

An Automated System for Linear Feature Name Placement which Complies with Cartographic Quality Criteria
Mathieu Barrault and François Lecordix 321

Compression of Spatial Data
Roman M. Krzanowski 331

Data Quality II

Spatial Simplification of Input Data for Hydrologic Models: Its Effect on Map Accuracy and Model Results
Casson Stallings, Siamak Khorram, and Rodney L. Huffman . . 341

Toward Implementing a Formal Approach to Automate Thematic Accuracy Checking for Digital Cartographic Datasets
Barbara Bicking and Kate Beard 355

Improving Remote Sensing Derived Land Use/Land Cover Classification with the Aid of Spatial Information
Yingchun Zhou, Sunil Narumalani, and Dennis E. Jelinski 363

Late Submissions

Automatic Map Feature Extraction Using Artificial Neural Networks
Itthi Trisirisatayawong and Mark R. Shortis 375