

GeoComputation 2005

The Art and Science of Solving Complex Spatial Problems with Computers

We are honored to welcome you to the 8th International Conference on GeoComputation in Ann Arbor on the campus of the University of Michigan. The conference continues a successful series of meetings held in the UK, New Zealand, Australia, and Virginia.

We would like to use this opportunity to express our sincere thanks to a group of dedicated scholars who have served as the organizing committee members, contributing to review the abstracts, to guide the preparation of the conference and to provide their advice for organizing a successful conference. They are Robert J. Abraham, University of Nottingham, Luc Anselin, University of Illinois, Shuming Bao, University of Michigan, Andrew Brenner, SpaceImaging, Inc., Keith Clarke, University of California at Santa Barbara, Mark Gahegan, Pennsylvania State University, Pierre Goovaerts, BioMedware, Inc., Phil Graniero, University of Windsor, Geoffrey Jacquez, BioMedware, Inc., Josef Kellndorfer, University of Michigan, Joe Messina, Michigan State University, John Nystuen, University of Michigan, Rick Riolo, University of Michigan, and Robert Shuchman, Altarum, Inc.

We express our gratitude to ESRI, Inc., School of Natural Resources and Environment at University of Michigan, Institute for Geospatial Research and Education at Eastern Michigan University, and the Center for the Study of Complex Systems at University of Michigan for their generous sponsorship to GeoComputation 2005. Because of their financial and personnel support, we were able to provide student travel awards and free reception, breakfast and coffee break. We in particular want to thank Mr. Howard Oishi for his efforts of making logistic arrangement for the conference, Mr. Xinyue Ye for his hard work of assisting the development of the conference program, and Ms Rui Liao for her contribution to develop and maintain the conference Website.

We are honored to have two distinguished scholars to present keynote addresses at the conference. Dr. John H. Holland is Professor of Psychology and Computer Science at University of Michigan. Known worldwide as the "father of genetic algorithms," he is a MacArthur Fellow, a Fellow of the World Economic Forum, and co-chairman of the Science Board of the Santa Fe Institute. His main research interests are complex adaptive systems (natural and artificial), computer-based models of cognitive processes, and the construction of models for computer-based thought experiments. Dr. Duane F. Marble is Professor Emeritus of Geography and Natural Resources, The Ohio State University. In 1973, He established the first formal university research unit dealing with GIS, as well as the first formal graduate program in Geography providing a specialization in GIS. Dr. Marble's primary research interests are in Geographic Information Science and its applications to transportation geography, especially with respect to the development of complex measures of accessibility, and problems in college and university enrollment, financial aid and student life.



Finally, we dedicate this conference to the memory of our colleague and friend Ferenc (Ferko) Csillag (1955-2005). Until his untimely death in June, Ferko was professor and chair of Geography at the University of Toronto at Mississauga. He was prolific in research and graduate training in a number of areas related to GeoComputation, including error propagation, accuracy assessment and stochastic simulation in spatial databases; spatiotemporal dynamics; regionalization of environmental and socio-economic data; and integration of remote sensing and geographic information systems. We honor his many contributions while we mourn our loss.

Yichun Xie, Ph.D., Co-Chair, GeoComputation 2005
Professor and Head, Department of Geography and Geology
Eastern Michigan University

Daniel G. Brown, Ph.D., Co-Chair, GeoComputation 2005
Associate Professor and Director, Environmental Spatial Analysis Laboratory
School of Natural Resources and Environment, University of Michigan

Program Calendar

*Unless otherwise noted, all events are in the Samuel T. Dana Building

Sunday (July 31, 2005)

Time	Session	Room
9:00 – 17:00	Registration Desk Open	Ford Commons
9:30 – 12:00	Agent-Based Modeling Using Agent Analyst Extension for ArcGIS	Room 3325
13:00 – 15:30	Exploring Spatial Data with GeoDa	Room 1040
16:00 – 18:30	Visualization, Cluster and Geostatistical Analysis in a Space-Time Intelligence System	Room 3325

Monday (August 1, 2005)

Time	Session	Room
7:30 – 17:00	Registration Desk Open	Ford Commons
7:30 – 8:30	Continental Breakfast	Ford Commons
9:00 – 9:30	Welcome, Dan Brown and Yichun Xie, Conference Co-Organizers	Room 1040
9:30– 10:15	Keynote Address I: Dr. John Holland, University of Michigan	Room 1040
10:15 – 10:45	Coffee Break	Ford Commons
10:00 – 17:00	Posters on Display	Ford Commons
10:45 – 12:15	Parallel Sessions	
	Autocorrelation and Geographical Weighting	Room 1024
	Agent-Based Modeling of Geographical Systems I	Room 1040
	Cellular Automata (CA) For Spatial Modeling	Room 1028
	Urban Spatial Simulation	Room 1046
12:15 – 13:30	Lunch on Your Own	
13:30 – 15:00	Parallel Sessions	
	Human Health Applications	Room 1024
	Agent-Based Modeling of Geographical Systems II	Room 1040
	Characterizing Spatial Distributions	Room 1028
	Coupling Models and Data	Room 1046
15:00 – 15:30	Coffee Break	Ford Commons
15:30 – 17:00	Parallel Sessions	
	Assessing Quality of Data and Models	Room 1024
	Agent-Based Modeling of Land Use Systems	Room 1040
	Conceptual Frontiers	Room 1028
18:00 – 20:00	Reception with Food and Drinks	Rackham Building

Tuesday (August 2, 2005)

Time	Session	Room
7:30 – 8:30	Continental Breakfast and Coffee	Ford Commons
8:30 – 10:00	Parallel Sessions	
	Model Sensitivity	Room 1024
	Empirical Approaches to Agent-Based Modeling	Room 1040
	Environmental and Ecological Informatics	Room 1028
10:00 – 10:30	Coffee Break	Ford Commons
10:30 – 12:00	Parallel Sessions	
	Evolutionary Approaches in Agent-Based Modeling	Room 1024
	Open Source Spatial Analysis Software I	Room 1040
	Representing Knowledge and Reasoning	Room 1028
	Interpolation and Unmixing	Room 1046

12:00 – 13:00	Lunch on Your Own	
13:00 – 14:30	Parallel Sessions	
	Evolutionary Approaches to Spatial Optimization	Room 1024
	Open Source Spatial Analysis Software II	Room 1040
	Geocomputation in Design Disciplines	Room 1028
	Dynamic Spatial Modeling	Room 1046
14:30 – 15:00	Coffee Break	Ford Commons
15:00 – 16:30	Parallel Sessions	
	Structures and Algorithms for Point Data	Room 1024
	Geostatistics and Simulation	Room 1040
	Network-Based Applications	Room 1028

Wednesday (August 3, 2005)

Time	Session	Room
7:30 – 8:30	Continental Breakfast and Coffee	Ford Commons
8:30 – 10:00	Parallel Sessions	
	Populations in Space and Time	Room 1024
	New Geocomputation Algorithms And Architectures	Room 1040
	Clustering	Room 1028
	Multidimensional Visualization and Data Mining	Room 1046
10:00 – 10:30	Coffee Break	Ford Commons
10:30 – 12:00	Parallel Sessions	
	Knowledge Discovery and Data Mining	Room 1024
	Demographic and Socioeconomic Modeling	Room 1040
	Spatial Modeling Of Discrete Entities And Events	Room 1028
	Health and Medical Informatics	Room 1046
12:00 – 12:30	Box Lunch Provided	Ford Commons
12:30 – 13:30	Keynote Address II: Dr. Duane Marble, The Ohio State University	Room 1040
13:30 – 14:00	Concluding Remarks: Yichun Xie and Dan Brown, Conference Co-Organizers	Room 1040

Sunday (July 31, 2005)

9:00 – 17:00: Registration Desk Open

Preconference Workshops

Workshops 1 and 3 have limited space based on pre-registration and both are full. Workshop 2 is open to all conference participants.

9:30 – 12:00: Workshop 1: Agent-Based Modeling Using Agent Analyst Extension for ArcGIS, Room 3325

Presenter: Michael J. North, Argonne National Lab.

Description: This software workshop will introduce the attendees to the fundamental concepts of agent-based modeling and the use of the Agent Analyst ArcGIS extension.

13:00 – 15:30: Workshop 2: Exploring Spatial Data with GeoDa, Room 1040

Presenters: Luc Anselin and Julia Koschinsky, University of Illinois

Description: This workshop will provide an overview of methods for exploratory spatial data analysis and spatial autocorrelation analysis, as implemented in the freely available GeoDa software package. It will illustrate the application of ESDA techniques such as dynamic linking and brushing, outlier detection, cartograms, animated maps, parallel coordinate plots, visualization of global and local spatial autocorrelation, and spatial regression. GeoDa was developed under the auspices of the NSF-sponsored Center for Spatially Integrated Social Science (http://sal.agecon.uiuc.edu/geoda_main.php).

16:00 – 18:30: Workshop 3: Visualization, Cluster and Geostatistical Analysis in a Space-Time Intelligence System (STIS), Room 3325

Presenters: Pierre Goovaerts, Dunrie Greiling and Geoffry M. Jacquez, BioMedware, Inc.

Description: Participants in this software workshop will be introduced to TerraSeer's STIS software and will learn basics of space-time visualization including map animation, polygon morphing and descriptive statistics. Fundamentals of cluster and geostatistical analysis will include the detection of health disparities and disease cluster analysis for residential histories.

*Unless otherwise noted, all events are in the Samuel T. Dana Building

Monday (August 1, 2005)

7:30: Registration Desk Opens, Continental Breakfast, Ford Commons

9:00: Welcome, Dan Brown and Yichun Xie, Conference Co-Organizers, Room 1040

9:30 – 10:15: Keynote Address I: John Holland, Room 1040

MODELING OF SPATIALLY EXTENDED ECOSYSTEMS

Dr. Holland is Professor of Psychology and Computer Science at University of Michigan. Known worldwide as the "father of genetic algorithms," he is a MacArthur Fellow, a Fellow of the World Economic Forum, and co-chairman of the Science Board of the Santa Fe Institute. His main research interests are complex adaptive systems (natural and artificial), computer-based models of cognitive processes, and the construction of models for computer-based thought experiments.

10:15 – 10:45: Coffee Break

10:00 – 17:00: Posters on Display during all Breaks on Monday, Ford Commons

1. Auroop R Ganguly, Vladimir Protopopescu and Alexandre Sorokine
UNCERTAINTY ANALYSIS IN THE LANDSCAN GLOBAL POPULATION DATABASE
2. Weidong Li and Chuanrong Zhang
TRANSIOGRAMS FOR CHARACTERIZING SOIL TYPE SPATIAL VARIABILITY

3. David Meyer, Sam Rotter and David Shrekenhamer
A STOCHASTIC POPULATION MODEL UTILIZING REGIONAL TRANSPORTATION NETWORKS
4. Scott W. Mitchell, Tarmo K. Remmel, Ferko Csillag and Mike Wulder
LANDSCAPE PATTERN AND PER-PIXEL CLASSIFICATION PROBABILITIES
5. Laércio M. Namikawa and Chris Renschler
A MODEL PERFORMANCE MEASURE FOR VALIDATION OF
GEOPHYSICAL MASS FLOW SIMULATION
6. John Radke, Weimin Li and Tao Lin
ROUTING RIVERS, LAKES AND PORTAGES
7. Alexandre Sorokine, Jamison Daniel, Cheng Liu
PARALLEL VISUALIZATION FOR GIS APPLICATIONS
8. Atsushi Takizawa
AGENT-BASED URBAN SIMULATION: RELATIONSHIP BETWEEN DECISION-MAKING OF
RENT AND SPACE-TIME LAND USE PATTERN
9. Yun Wang
MODELING IMPACTS OF LAND-USE CHANGE ON SPATIAL DISTRIBUTIONS OF EMISSIONS
10. Jianhong Xia, Vic Ciesielski and Colin Arrowsmith
DATA MINING OF TOURISTS' SPATIO-TEMPORAL MOVEMENT PATTERNS:
A CASE STUDY ON PHILLIP ISLAND

10:45 – 12:15: Paper Sessions

Session 101: Autocorrelation and Geographical Weighting, Room 1024

1. Ashton Shortridge
NOTE IN MORAN'S I: ASSESSING THE LIMITS OF THE AUTOCORRELATION INDEX
FOR RASTER CLASS MAPS
2. A. Stewart Fotheringham, Martin Charlton, Chris Brunsdon and Tomoki Nakaya
MODEL SELECTION ISSUES IN GEOGRAPHICALLY WEIGHTED REGRESSION
3. Haijun Shi, Lianjun Zhang and Jianguo Liu
INCORPORATING BOTH GEOGRAPHICAL SPACE AND ATTRIBUTE SPACE INTO
THE KERNEL WEIGHTING FUNCTION OF GEOGRAPHICALLY WEIGHTED REGRESSION

Moderator: Sergio Rey

Session 102: Agent-Based Modeling of Geographical Systems I, Room 1040

1. Yasser Hammam, Antoni Moore, Peter Whigham and Claire Freeman
A GENERIC SPATIAL MODEL BASED ON VECTOR AGENTS
2. Paul Torrens
A BEHAVIORAL MODEL FOR SIMULATING AGENT MOVEMENT
3. Alison J. Heppenstall, Mark H. Birkin and Andrew J. Evans
OPTIMISING A HYBRID AGENT-BASED SYSTEM WITH APPLICATION TO
THE RETAIL PETROL MARKET

Moderator: Catherine Dibble

Session 103: Cellular Automata (CA) For Spatial Modeling, Room 1028

1. Sharaf Alkheder and Jie Shan
CELLULAR AUTOMATA URBAN GROWTH SIMULATION AND EVALUATION:
A CASE STUDY OF INDIANAPOLIS
2. Xinyue Ye, Yichun Xie and Micheal Batty
MODELING AND CALIBRATING TRANSITION RULES IN URBAN CELLULAR AUTOMATA
3. Christopher Bone and Suzana Dragicevic
SENSITIVITY OF A FUZZY-CONSTRAINED CELLULAR AUTOMATA MODEL OF
FOREST INSECT INFESTATION

Moderator: Atsushi Nara

Session 104: Urban Spatial Simulation, Room 1046

1. David Ostrowski
AN ABM APPROACH FOR THE DEVELOPMENT OF AN ALTERNATIVE FUEL INFRASTRUCTURE
2. John Radke, Alexandre Repetti and Jianchun Xu
A WEB BASED GEOGRAPHIC INFORMATION PLATFORM TO SUPPORT FIRE MODELING EFFORTS IN THE WILDLAND URBAN INTERFACE
3. Giorgos Mountrakis and Gillian AvRuskin
MODELING RURALITY USING SPATIAL INDICATORS

Moderator: Moira L. Zellner

12:15 – 13:30: Lunch on Your Own

13:30 – 15:00: Paper Sessions

Session 201: Human Health Applications, Room 1024

1. Tyler Erickson, Sean Savage and Robert Shuchman
ECOLOGICAL AND HUMAN HEALTH RISK ASSESSMENT FOR THE KALAMAZOO RIVER SUPERFUND SITE USING A WEB-BASED GIS
2. Xiping Dai and Mark Gahegan
VISUALIZATION BASED APPROACH FOR EXPLORATION OF HEALTH DATA AND RISK FACTORS
3. Diana Cregar
INVESTIGATING THE SPATIAL RELATIONSHIPS BETWEEN ENVIRONMENTAL TOXINS AND AUTISM SPECTRUM DISORDERS

Moderator: Li An

Session 202: Agent-Based Modeling of Geographical Systems II, Room 1040

1. Catherine Dibble
SAVING LIVES WITH AGENT-BASED GEOCOMPUTATION
2. Tiyan Shen, Xun Li, Zhaocheng Guo, Lin Xue, Kaizhong Yang and Liming Wang
AN INTEGRATED SYSTEM OF ABM AND GIS WITH GRID COMPUTING
3. Atsushi Nara and Paul M. Torrens
INNER-CITY GENTRIFICATION SIMULATION USING HYBRID MODELS OF CELLULAR AUTOMATA AND MULTI-AGENT SYSTEMS

Moderator: Alison J. Heppenstall

Session 203: Characterizing Spatial Distributions, Room 1028

1. Z. Asligul Gocmen
METHODOLOGICAL ISSUES IN CREATING A REGIONAL NEIGHBORHOOD TYPOLOGY
2. Gary M. Pereira
INVESTIGATING THE EFFECTS OF FUNCTIONAL DIVERSITY IN SPATIALLY DISTRIBUTED GEOGRAPHIC DOMAINS
3. Sinesio Alves Junior and Mauro Barros Filho
MULTISCALE MEASUREMENTS OF FRAGMENTED CITIES: ENHANCING URBAN ANALYSIS THROUGH LACUNARITY BASED MEASURES

Moderator: John Radke

Session 204: Coupling Models and Data, Room 1046

1. Phil A. Graniero and Vincent B. Robinson
SPATIALLY EXPLICIT AGENTS AND LANDSCAPE MODELS COUPLED IN A SINGLE FRAMEWORK? IT ALL DEPENDS ON HOW YOU VIEW IT
2. Tom Bulatewicz and Janice Cuny
INTERFACE-BASED SUPPORT FOR MODEL COUPLING: SPATIAL REPRESENTATION AND COMPATIBILITY ISSUES
3. Tarmo K. Remmel and Ferko Csillag
SPECTRA OF COINCIDENCES BETWEEN SPATIAL DATA SETS: TOWARD HIERARCHICAL INFERENTIAL COMPARISONS OF CATEGORICAL MAPS

Moderator: Anna J Versluis

15:30 – 17:00: Paper Sessions

Session 301: Assessing Quality of Data and Models, Room 1024

1. Robert Gilmore Pontius Jr, Anna J Versluis, and Nicholas R Malizia
VISUALIZING THE CERTAINTY FOR EXTRAPOLATIONS FROM MODELS OF
LANDSCAPE CHANGE
2. Yang Li
AGENT TECHNOLOGIES FOR SPATIAL DATA QUALITY ANALYSIS
IN ENVIRONMENTAL MODELLING
3. L. Fu, L.-K. Soh, Ashok Samal
INCORPORATING QUALITY OF DATA IN GEOSPATIAL ANALYSIS

Moderator: Tarmo K. Remmel

Session 302: Agent-Based Modeling of Land Use Systems, Room 1040

1. Martin Rudbeck Jepsen, Steve Leitz, Rikke Folving, Kjeld Rasmussen and Lasse Møller-Jensen
AGENT-BASED MODELLING OF FIELD PATTERNS IN UPLAND CULTIVATION IN VIETNAM
2. Moira L. Zellner
GENERATING POLICIES FOR SUSTAINABLE WATER-USE IN COMPLEX SCENARIOS:
AN AGENT-BASED MODEL OF MONROE COUNTY, MICHIGAN
3. Arika Ligmann-Zielinska, Richard L. Church, Piotr Jankowski
SUSTAINABLE URBAN LAND USE ALLOCATION WITH SPATIAL OPTIMIZATION

Moderator: Paul M. Torrens

Session 303: Conceptual Frontiers, Room 1028

1. Shaowen Wang and Marc P. Armstrong
A THEORY OF THE SPATIAL COMPUTATIONAL DOMAIN
2. Noah Charles Goldstein
A FORMALIZATION OF SPATIAL SPREAD
3. Jeremy Mennis, Jeff Leong and Rahul Khanna
MULTIDIMENSIONAL MAP ALGEBRA

Moderator: Phil A. Graniero

18:00 – 20:00: Reception with Food and Drinks, 4th Floor Rackham Building

Tuesday (August 2, 2005)

7:30 – 8:30: Continental Breakfast and Coffee, Ford Commons

8:30 – 10:00: Paper Sessions

Session 401: Empirical Approaches to Agent-Based Modeling, Room 1040

1. Li An, Daniel Brown, William Rand and Scott Page
WHAT STATISTICAL MODELS CAN BETTER DETECT LAND-CHANGE MECHANISMS?
2. Tom Evans
SPATIALLY EXPLICIT COMPUTER-BASED EXPERIMENTS AS A TOOL FOR
EXPLORING HETEROGENEOUS DECISION-MAKING DYNAMICS IN AGENT-BASED MODELS
OF LANDCOVER CHANGE
3. David A. Bennett and Wenwu Tang
AN AGENT-BASED SIMULATION OF YELLOWSTONE'S NORTHERN
RANGE ELK HERD: A COGNITIVE APPROACH

Moderator: Steven Manson

Session 402: Model Sensitivity, Room 1024

1. Kevin M. Johnston, Steve Kopp and Corey Tucker
PROCESS, SIMULATION, ERROR, AND SENSITIVITY MODELING INTEGRATED
IN A MODELING ENVIRONMENT
 2. N.C. Goldstein, C. Dietzel and K.C. Clarke
DON'T STOP 'TIL YOU GET ENOUGH - SENSITIVITY TESTING OF
MONTE CARLO ITERATIONS FOR MODEL CALIBRATION
 3. Seth H. Peterson, N.C. Goldstein, M.L. Clark, K.Q. Halligan, P. Schneider, P.E. Dennison and D.A. Roberts
SENSITIVITY ANALYSIS OF THE 2003 SIMI WILDFIRE EVENT
- Moderator: Xinyue Ye

Session 403: Environmental and Ecological Informatics, Room 1028

1. Jennifer Miller
A COMPARISON OF METHODS FOR INCORPORATING SPATIAL DEPENDENCE IN
PREDICTIVE VEGETATION MODELS: A MOJAVE DESERT CASE STUDY
 2. Ari Jolma, Teemu Kokkonen, Harri Koivusalo and Hanne Laine
COMPUTATION OF INFORMATION FOR ENVIRONMENTAL MANAGEMENT
FROM THE RESULTS OF REGIONAL CLIMATE MODEL SIMULATIONS IN EUROPE
 3. Chris Renschler and Martin Minkowski
REPRESENTATIVE HILLSLOPES IN GEOSPATIAL MODELING:
REPRESENTING ENVIRONMENTAL PROPERTIES AND PROCESSES AT VARIOUS SCALES
- Moderator: Steven D. Prager

10:30 – 12:00: Paper Sessions

Session 501: Evolutionary Approaches in Agent-Based Modeling, Room 1024

1. Jamison Conley
EVOLVING BOIDS: USING A GENETIC ALGORITHM TO DEVELOP BOID BEHAVIORS
 2. Steven Manson
GENETIC PROGRAMMING AS AN ISOMORPHIC ANALOG TO BOUNDED RATIONALITY
IN AGENT-BASED MODELS
 3. Bob Reynolds, Z. Kobti and T. Kohler
LEARNING IN DYNAMIC MULTI-LAYERED SOCIAL NETWORKS: A MESA VERDE EXAMPLE
- Moderator: Tom Evans

Session 502: Representing Knowledge and Reasoning, Room 1028

1. Steven M. Rozic and Phil A. Graniero
REPRESENTING DOMAIN AND SPATIAL KNOWLEDGE WITH ONTOLOGIES
IN A SPATIAL DECISION SUPPORT FRAMEWORK
 2. Tae H. Kim and Thomas J. Cova
TWEENING GRAMMARS: DEFORMATION RULES FOR REPRESENTING CHANGE
BETWEEN DISCRETE GEOGRAPHIC ENTITIES
 3. Van Parunak, John Sauter, Sven Brueckner, Bob Matthews
SWARMING METHODS FOR GEOSPATIAL REASONING
- Moderator: Shaowen Wang

Session 503: Open Source Spatial Analysis Software I (Session Organizer: Luc Anselin), Room 1040

1. Luc Anselin and Sergio J. Rey
PYSAL, A PYTHON LIBRARY FOR SPATIAL ANALYTICAL FUNCTIONS
 2. Barry Rowlingson, Edzer Pebesma, and Roger Bivand
COLLABORATIVE OPEN SOURCE SOFTWARE DEVELOPMENT: THE CASE OF SP,
A PACKAGE OF R CLASS DEFINITIONS FOR SPATIAL DATA
 3. Mark Gahegan and James Macgill
FITTING THE PIECES TOGETHER: A GEOCOMPUTATIONAL PROBLEM-SOLVING
ENVIRONMENT TO INTEGRATE DISPARATE ANALYSIS AN VISUALIZATION TOOL
- Moderator: Ningchuan Xiao

Session 504: Interpolation and Unmixing, Room 1046

1. Phaedon C. Kyriakidis, Philipp Schneider and Michael F. Goodchild
IMPROVING SPATIAL DATA INTEROPERABILITY USING GEOSTATISTICAL
SUPPORT-TO-SUPPORT INTERPOLATION
 2. Juan P. Rigol, Claire J. Jarvis and Neil Stuart
AVOIDING 'CONSTANT DRIZZLE': A TWO-PART NEURAL NETWORK-BASED MODEL
FOR SPATIAL INTERPOLATION OF DAILY RAINFALL
 3. Yasuyo Makido and Ashton Shortridge
LAND COVER MAPPING AT SUB-PIXEL SCALES: UNRAVELING THE MIXED PIXEL
- Moderator: David A. Bennett

12:00 – 13:00: Lunch on Your Own

13:00 – 14:30: Paper Sessions

Session 601: Evolutionary Approaches to Spatial Optimization, Room 1024

1. Jiunn-Der Duh and Daniel G. Brown
KNOWLEDGE-INFORMED PARETO SIMULATED ANNEALING
FOR MULTI-OBJECTIVE SPATIAL ALLOCATION
 2. Ningchuan Xiao
GEOGRAPHIC OPTIMIZATION USING EVOLUTIONARY ALGORITHMS
 3. Xingdong Zhang and Marc Armstrong
USING A GENETIC ALGORITHM TO GENERATE ALTERNATIVES FOR MULTI-OBJECTIVE
CORRIDOR LOCATION PROBLEMS
- Moderator: Phaedon C. Kyriakidis

Session 602: Geocomputation in Design Disciplines, Room 1028

1. Wendy Cox
THE WORKINGS OF COMPLEXITY WITHIN THE ARCHITECTURAL DISCIPLINE
 2. Jing-Ji Chang and Teng-wen Chang
CHINESE CALLIGRAPHY ILLUSTRATION AS SPACE FORM INSPIRATION
- Moderator: N.C. Goldstein

Session 603: Open Source Spatial Analysis Software II (Session Organizer: Luc Anselin), Room 1040

1. Yunping Liu, Mark Gahegan and James Macgill
INCREASING GEOCOMPUTATIONAL INTEROPERABILITY:
TOWARDS A STANDARD GEOCOMPUTATION API
 2. Yongwan Chun, Roger Bivand and Michael Tiefelsdorf
USING OPEN SOURCE DATA ANALYSIS ENVIRONMENTS FOR PROTOTYPING SPATIAL
MODELING IMPLEMENTATIONS IN R
 3. Sergio J. Rey, Mark V. Janikas and Oleg Smirnov
EXPLORATORY GEOVISUALIZATION OF SPATIAL DYNAMICS
- Moderator: Sharaf Alkhder

Session 604: Dynamic Spatial Modeling, Room 1046

1. Pariwate Varnakoviada and Joseph Messina
CRITICAL THRESHOLDS AND SENSITIVITY DYNAMICS OF PERCOLATION
 2. Zhanli Sun
LEAM: EXTENDED CELLULAR AUTOMATA MODEL OF URBAN LAND-USE CHANGE
 3. Mallikarjun Shankar, Cheng Liu, and Budhendra Bhaduri
FROM STATIC TO DYNAMIC MODELS: ENABLING REAL-TIME
GEOCOMPUTATION INFRASTRUCTURES
- Moderator: Chris Renschler

14:30 – 15:00: Coffee Break

15:00 – 16:30: Paper Sessions

Session 701: Geostatistics and Simulation, Room 1040

1. Amy Powers
SIMULATING PATTERNS OF UNCERTAINTY IN POST-CLASSIFICATION CHANGE DETECTION
2. Eun-Hye Yoo and Phaedon C. Kyriakidis
AREA -TO-POINT KRIGING WITH INEQUALITY-TYPE DATA
3. Pierre Goovaerts and Geoffrey Jacquez
VISUALIZATION AND PROPAGATION OF SPATIAL UNCERTAINTY IN CANCER MORTALITY RATES USING POISSON KRIGING AND P-FIELD SIMULATION

Moderator: Charles Ehlschlaeger

Session 702: Structures and Algorithms for Point Data, Room 1024

1. Jun Wang and Jie Shan
SPACE-FILLING CURVE BASED POINT CLOUDS INDEX
2. Chung-Shiuan Fu and Jie Shan
CONSTRUCT 3-D BUILDING TOPOLOGY FROM POINT PRIMITIVES
3. Yoshiki Harada and Yukio Sadahiro
A QUANTITATIVE MODEL OF PLACE NAMES AS A GEOREFERENCING SYSTEM

Moderator: Itzhak Benenson

Session 703: Network-Based Applications, Room 1028

1. Jingnong Weng, Weijing Wang, Ke Fan and Jian Huang
DESIGN AND IMPLEMENTATION OF SPATIAL-TEMPORAL DATA MODEL IN VEHICLE MONITOR SYSTEM
2. Alasdair Turner and Nick Dalton
A SIMPLIFIED ROUTE CHOICE MODEL USING THE SHORTEST ANGULAR PATH ASSUMPTION
3. Ruth Conroy Dalton and Nick Sheep Dalton
A SPATIAL SIGNATURE OF SPRAWL: OR THE PROPORTION AND DISTRIBUTION OF LINEAR NETWORK CIRCUITS

Moderator: Budhendra Bhaduri

Wednesday (August 3, 2005)

7:30 – 8:30: Continental Breakfast with Coffee, Ford Commons, Dana Building

8:30 – 10:00: Paper Sessions

Session 801: Populations in Space and Time, Room 1024

1. Ian Gregory
ANALYZING LONG-TERM SPATIO-TEMPORAL CHANGE USING HISTORICAL GIS DATA
2. Budhendra Bhaduri, Eddie Bright and Phil Coleman
DEVELOPMENT OF A HIGH RESOLUTION POPULATION DYNAMICS MODEL
3. Gillian AvRuskin, Jaymie Meliker, Melissa Slotnick and Andrew Kaufmann
RECONSTRUCTING LIFETIME EXPOSURE TO ARSENIC IN DRINKING WATER USING SPATIOTEMPORAL INFORMATION

Moderator: Gina Weir-Smith

Session 802: Clustering, Room 1028

1. Allan Brimicombe
CLUSTER DETECTION IN POINT EVENT DATA HAVING TENDENCY TOWARDS SPATIALLY REPETITIVE EVENTS

2. Charles Ehlschlaeger
INCORPORATING SECOND-ORDER PROPERTIES IN “DIGITAL POPULATIONS”
FOR CLUSTER DETECTION AND AGENT-BASED MODELING
3. J. Zhang, Ashok Samal and L.-K. Soh
POLYGON-BASED SPATIAL CLUSTERING

Moderator: Amy Powers

Session 803: New Geocomputation Algorithms And Architectures, Room 1040

1. Itzhak Benenson and Vlad Kharbash
GEOGRAPHIC AUTOMATA: FROM PARADIGM TO SOFTWARE AND BACK TO PARADIGM
2. Ian Turton and James Macgill
BUILDING A STANDARDS BASED COLLABORATIVE GIS
3. Michael T. Gastner and M.E.J. Newman
DENSITY-EQUALIZING MAP PROJECTIONS: DIFFUSION-BASED ALGORITHM
AND APPLICATIONS

Moderator: Bin Li

Session 804: Multidimensional Visualization and Data Mining, Room 1046

1. Honghu Wei
3D VISUALIZATION OF COMPLICATED ROCK IN HYDROPOWER ENGINEERING
2. Robert J. Abraham and Roy P. Bradshaw
VISUAL DATA MINING: BUILDING 'SPACE-TIME-CUBE' SOCIO-ECONOMIC CONDUITS
FOR PROVINCIAL LEVEL MODELLING OF THE REGIONAL DEVELOPMENT PROCESS
IN SPAIN 1955-1977
3. Jianwei Dou and Donna J. Peuquet
FLEXIBLE INDEXING OF SPATIOTEMPORAL INFORMATION WITH MULTIPLE VIEWS

Moderator: Roy E. Plotnick

10:30 – 12:00: Paper Sessions

Session 901: Knowledge Discovery and Data Mining, Room 1024

1. John Radke, Jianchun Xu and Patricia Frontiera
ESTABLISHING CONCAVE GEOMETRIC APPROXIMATIONS TO BETTER CAPTURE
SPATIAL LOCATION, EXTENT AND SHAPE FOR GEOGRAPHIC INFORMATION RETRIEVAL
2. Charles W. Emerson, Sivagurunathan Chinniah, Nina Siu -Ngan Lam and Dale A. Quattrochi
A REGION QUADTREE-BASED FRAMEWORK
FOR SIMILARITY SEARCHES OF IMAGE DATABASES
3. Tonny J. Oyana, Deepthi Boppidi, Jun Yun and Jamson S. Lwebuga-Mukasa
EXPLORATION OF GEOGRAPHIC INFORMATION SYSTEMS (GIS)-BASED MEDICAL DATABASES
WITH SELF ORGANIZING MAPS (SOM): A CASE STUDY OF ADULT ASTHMA

Moderator: Ian Turton

Session 902: Spatial Modeling Of Discrete Entities And Events, Room 1028

1. Lawton J. Clites and Zoe Henscheid
MODELING THE ROLE OF CARRIER SPECIES IN THE SPREAD OF HEMLOCK WOOLLY ADELGID
2. Roy E. Plotnick and Karen Koy
LET US PREY: SIMULATIONS OF GRAZING TRACES IN THE FOSSIL RECORD
3. Steven D. Prager
Environmental Contextualization of Uncertainty for Moving Objects

Moderator: Mallikarjun Shankar

Session 903: Demographic and Socioeconomic Modeling, Room 1040

1. A Stewart Fotheringham, Martin Charlton, Mary O'Brien and David Martin
CREATING SMALL AREAS FOR IRELAND – PROBLEMS AND OPPORTUNITIES
2. Jerry Platt
ON STATISTICAL APPROXIMATIONS OF GEOGRAPHICAL MAPS

3. Gina Weir-Smith
FINDING THE JOBLESS: AN INITIAL SPATIO-TEMPORAL MODELLING OF
UNEMPLOYMENT IN SOUTH AFRICA
Moderator: Gillian AvRuskin

Session 904: Health and Medical Informatics, Room 1046

1. Bin Li, Qi Li and Chunbo Liu
THE DESIGN AND IMPLEMENTATION OF A SYSTEM FOR EPIDEMIC RESPONSE IN URBAN AREAS
 2. Geoffrey Jacquez
CASE-CONTROL GEOGRAPHIC CLUSTERING FOR MOBILE POPULATIONS:
METHODS FOR INFECTIOUS AND CHRONIC DISEASES
 3. YQ Tian, TS Troppy, W Dripps, and D Chalfoiux
AN EXPLORATORY SPATIAL ANALYSIS TO IDENTIFY THE APPROPRIATE SCALE AND
POTENTIAL RISK FACTORS FOR UNDERSTANDING OBESITY DISTRIBUTIONS
- Moderator: Jiunn-Der Duh

12:00 - 12:30: Box Lunch Provided, Ford Commons

12:30 – 13:30: Keynote Address II: Duane Marble, Room 1040

SOME OBSERVATIONS ON THE INTERACTION BETWEEN SPATIAL DATA HANDLING AND
ANALYSIS AND COMPUTER SCIENCE AND TECHNOLOGY

Dr. Marble is Professor Emeritus of Geography and Natural Resources, The Ohio State University. In 1973, He established the first formal university research unit dealing with GIS, as well as the first formal graduate program in Geography providing a specialization in GIS. Dr. Marble's primary research interests are in Geographic Information Science and its applications to transportation geography, especially with respect to the development of complex measures of accessibility, and problems in college and university enrollment, financial aid and student life.

13:30-14:00: Concluding Remarks: Yichun Xie and Dan Brown, Conference Co-Organizers, Room 1040