

### Updates

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### Education

PostDoc (2004-2005) United States Geological Survey, Fort Collins, CO

Research topic: *"Synergetic Use of Satellite Imagery and Ancillary Data for Impervious Surface Estimation in the contiguous US"*.

Ph.D. (2004) Department of Spatial Information Science and Engineering, University of Maine, Orono, ME

Dissertation: *"Similarity Learning in Geospatial Environments using a Neuro-Fuzzy System"*.

M.Sc. (2000) Department of Spatial Information Science and Engineering, University of Maine, Orono, ME

Master Thesis: *"Image-Based Change Detection Using an Integrated Spatiotemporal Gazetteer"*.

Dipl. Eng. (1998) Spatial Information Engineering, National Technical University of Athens, Greece

Diploma Thesis: *"Determination and Correction of Radial Distortion in Super-wide Angle Lenses of Non-metric Cameras"*.

### Research Portfolio

GIS: Space and Space-Time Statistics, Animal movement models, Urban growth models, Spatiotemporal database design and structure.

Machine learning: Prediction modeling and similarity learning within GIS using artificial intelligence tools such as fuzzy logic and neural networks.

Remote Sensing: Hybrid classifiers, Change detection in aerial imagery, Spectral unmixing in multispectral imagery.

### Teaching Portfolio

Principles of Remote Sensing (4cr, mostly undergraduate level).

Digital Image Analysis (3cr, mostly graduate level).

Spatial Analysis (3cr, mostly graduate level).

Artificial Intelligence in Geography (1cr, graduate level).

## Experience

Assistant Professor (2005-current)

State Univ. of NY College of Environmental Science and Forestry, Syracuse, NY

National Academies Postdoctoral Fellow (2004-2005)

U.S. Geological Survey, Fort Collins, CO

National Academies of Science funded project on *"Synergetic Use of Satellite Imagery and Ancillary Data for Impervious Surface Estimation in the contiguous US"*.

Research Assistant (1998-2004)

National Center for Geographic Information Analysis (NCGIA), University of Maine, Orono, ME

National Science Foundation funded project on *"Enabling the Creation and Use of GeoGrids for Next Generation Geospatial Information"*. NSF Division of Information and Intelligent Systems. (2001-2004).

National Imagery and Mapping Agency funded project on *"A Spatio-Temporal Model for Integrated Information Management"*. (1998-2001).

Teaching Assistant (2002)

Department of Spatial Information Science and Engineering, University of Maine, Orono, ME

Teaching an advanced level course on Digital Image Processing.

GIS Database Engineer (1998)

Kotouzas Co., Athens, Greece

Acted as a consultant on database issues focusing on the Greek Cadastre.

## Awards

NASA New Investigator Program (2008)

Syracuse, NY

Prestigious research award from NASA from the earth science division

National Academies of Science, National Research Council (2004)

Fort Collins, CO

Postdoctoral Award based on a national competition to perform research in one of their accredited agencies

Graduate Researcher Award (2004)

Orono, ME

University of Maine Graduate Student Award

SPIE Travel Award (2000)

Orlando, FL

Travel award by conference organizers to present research paper

University Consortium for GIS Travel Award (2000)

Portland, OR

Travel award by conference organizers to present research paper

Scholarship Award by the Evgenidion Foundation (1998)

Athens, Greece

Competitive scholarship to study in the USA.

Outstanding Thesis Award by the National Technical Chamber of Greece (1998)

Athens, Greece

Diploma thesis received 2<sup>nd</sup> place award (among approx. 100 candidates) in Thesis of the Year Competition in the Spatial Information field.

**Computer/  
Communication  
Skills**

Software

Operating Systems: Windows (expert), Mac OS X (intermediate), Linux (novice).

Development Tools: Matlab, Visual Basic, Mathcad, VRML, C++.

GIS and Image Processing: ESRI ArcGIS, ArcView and MapObjects, Erdas Imagine, Adobe Photoshop and others.

Others: Microsoft Office, Macromedia Dreamweaver and Flash, Apache Webserver, Various FTP Servers.

Interpersonal

Extensive interaction with colleagues and researchers from various backgrounds with proven capability to function in interdisciplinary groups.

Frequent communication with funding agency representatives to present my work and research plans, and evaluate how they meet their needs.

Languages

Fluent: English, Greek. Basic: German, Italian.

**Interests**

Variety of sports including volleyball, soccer, basketball, swimming and tennis.

Traveling.

Music of numerous kinds.

## References

Available upon request.

## Patents

G. Mountrakis. A novel multi-scale radial basis function neural network. Full patent application submitted in 2006 supported by the University of Maine, currently at the last stages of review by the USPTO.

## Publications

### Book Chapters

G. Mountrakis (2009). Geographic Data Mining: An Introduction. Invited chapter in the ASPRS Manual of Geographic Information Systems. M. Madden (ed.), Chapter 27, pp. 495-508.

R. Watts, G. Mountrakis (2009). Transportation Spatial Indicators: Relating the Transportation Network to the Land. Invited chapter in the ASPRS Manual of Geographic Information Systems. M. Madden (ed.), Chapter 34, pp. 659-676.

G. Mountrakis, P. Agouris, A. Stefanidis (2004). Similarity Learning in GIS: An Overview of Definitions, Prerequisites and Challenges. M. Vassilakopoulos, A. Papadopoulos and Y. Manolopoulos (eds.) Spatial Databases: Technologies, Techniques and Trends, Idea Group Co, pp. 294-321.

### Journal Papers

G. Mountrakis, K. Gunson (to appear). Multi-scale spatiotemporal analyses of moose-vehicle collisions: A case study in northern Vermont. *International Journal of Geographical Information Science*.

G. Mountrakis, R. Watts, L. Luo, J. Wang (2009). Developing Collaborative Classifiers using an Expert-based Model. *Photogrammetric Engineering and Remote Sensing*, 75(7):831-844.

G. Mountrakis, A. Stefanidis (2008). Foreword for Special Issue: Artificial Intelligence in Remote Sensing, *Photogrammetric Engineering and Remote Sensing*, 74(10):1199.

G. Mountrakis (2008). Next generation classifiers: Focusing on integration frameworks. Highlight article for *Photogrammetric Engineering and Remote Sensing*, 74(10):1178-1180.

G. Mountrakis, P. Agouris, A. Stefanidis, (2005). Adaptable User Profiles for Intelligent Geospatial Queries. *Transactions in GIS*, Vol. 9, No. 4, pp. 561-583.

G. Mountrakis, P. Agouris, I. Schlaisich, A. Stefanidis, (2004). Supporting Quality-Based Image Retrieval Through User Preference Learning. *Photogrammetric Engineering and Remote Sensing*, Vol. 70, No. 8, pp. 973-981.

P. Agouris, K. Beard, G. Mountrakis, A. Stefanidis, (2000). Capturing and Modeling Geographic Object Change: A Spatio-Temporal Gazetteer Framework. *Photogrammetric Engineering and Remote Sensing*, Vol. 66, No. 10, pp. 1224-1250.

### Fully Refereed Conference Papers

A. Stefanidis, C. Georgiadis, P. Agouris, G. Mountrakis, (2005). Suitability Assessment of Ground Level Imagery for Geospatial VR Modeling. *International Archives of Photogrammetry and Remote Sensing - 3D Virtual Reconstruction and Visualization Conference*, Venice, Italy.

G. Mountrakis, P. Agouris, A. Stefanidis, (2003). Multitemporal Geospatial Query Grouping using Correlation Signatures. *IEEE International Conference on Image Processing (ICIP) 2003*, Vol. 3, pp.

545'548, Barcelona, Spain.

G. Mountrakis, P. Agouris, (2003). Learning Similarity with Fuzzy Functions of Adaptable Complexity. 8th International Symposium on Spatial and Temporal Databases (2003), Lecture Notes in Computer Science, Vol. 2750, pp. 412-429, Santorini, Greece.

G. Mountrakis, P. Agouris, A. Stefanidis, (2002). A Differential Spatiotemporal Model: Primitives and Operators. Advances in Spatial Data Handling, pp. 255-268, Ottawa, Canada.

G. Mountrakis, P. Agouris, A. Stefanidis, (2000). Navigating Through Hierarchical Change Propagation in Spatiotemporal Queries. Time 2000 Workshop, IEEE Press, pp. 123-131, Cape Breton, NS, Canada.

### **Refereed Conference Papers**

G. Mountrakis, G. Avruskin, K. Beard (2005). Modeling Rurality using Spatial Indicators. Geocomputation 2005, Ann Arbor, MI, USA.

P. Agouris, G. Mountrakis, A. Stefanidis, (2001). Establishing correlations in multi-dimensional GIS databases. ISPRS Commission IV Joint Workshop on Challenges in Geospatial Analysis, Integration and Visualization, October 29-31, 2001, Athens, GA, USA.

G. Mountrakis, P. Agouris, A. Stefanidis, (2000). Modeling and Detecting Change in an Integrated Spatio-Temporal Environment. International Archives of Photogrammetry and Remote Sensing, Vol. 33, Part B4, pp. 694-701, Amsterdam, The Netherlands.

G. Mountrakis, P. Agouris, A. Stefanidis, K. Beard, (2000). Automated spatio-temporal change detection in digital aerial imagery. Aerosense 2000, SPIE Proceedings Vol. 4054, pp. 2-12, Orlando, FL.

G. E. Karras, G. Mountrakis, P. Patias, E. Petsa, (1998). Modeling Distortion of super-wide-angle lenses for Architectural and Archaeological applications. International Archives of Photogrammetry & Remote Sensing, 32(5), pp. 570-573, Hakodate, Japan.

### **Theses**

G. Mountrakis (2004). Context-Specific Preference Learning of One-Dimensional Quantitative Geospatial Attributes using a Neuro-Fuzzy Approach. Dissertation, Spatial Information Engineering, University of Maine, USA.

G. Mountrakis (2000). Image-Based Change Detection Using an Integrated Spatiotemporal Gazetteer. Master Thesis, Spatial Information Engineering, University of Maine, USA.

G. Mountrakis (1998). Determination and Correction of Radial Distortion in super-wide angle lenses of non-metric cameras. Diploma in Engineering Thesis, Spatial Information Engineering Department, National Technical University of Athens, Greece.

## Research grants (in chronological order):

- **"Using LIDAR to assess the roles of climate and land-cover dynamics as drivers of change in biodiversity"**  
National Aeronautics and Space Administration  
Role: PI with Bill Porter, Colin Beier, Lianjun Zhang and Ben Zuckerberg, Amount: ~\$809,000 ,  
Duration: 2009-2012  
More Information: Work starts in Sept/2009
- **"Satellite-derived anthropogenic land use/land cover changes: Integrating detection, modeling and educational approaches"**  
National Aeronautics and Space Administration  
Role: PI , Amount: \$359,341 , Duration: 2008-2011  
More Information: Integrate remote sensing classifiers with urban growth models.
- **"Establishing a Novel Forest Assessment Method: The Forestless Volume Indicator"**  
USDA – Forest Service  
Role: PI , Amount: ~\$120,000 (including 50% SUNY-ESF match), Duration: 2008-2010
- **"Bridging the temporal mismatch between remotely-sensed land use changes and field-based water quality/quantity observations"**  
Syracuse Center of Excellence  
Role: PI with Karin Limburg and Myrna Hall, Amount: \$100,000 , Duration: 2008-2009
- **"Incorporating Spatially-Explicit Uncertainty Metrics in Image-Derived Classification of Impervious Surfaces"**  
National Science Foundation  
Role: PI , Amount: \$50,000 , Duration: 2007-2008
- **"An Integrated Monitoring/Modeling Framework for Assessing Human-Nature Interactions in Urbanizing Watersheds: Wappinger and Onondaga Creek Watersheds"**  
Syracuse Center of Excellence  
Role: Co-PI with Karin Limburg (PI), Myrna Hall and Peter Groffman , Amount: \$300,000 ,  
Duration: 2006-2008
- **"Monitoring Human-Induced Land Use Changes along the Great Lakes"**  
Great Lakes Research Consortium  
Role: PI , Amount: \$10,000 , Duration: 2006-2007
- **"Synergetic Use of Satellite Imagery and Ancillary Data for Impervious Surface Estimation in the contiguous US"**  
National Academies of Science and US Geological Survey  
Role: PI , Amount: ~\$80,000 , Duration: 2004-2005