

DENIS J. DEAN

Geography and Geospatial Information Sciences Programs,
School of Economic, Political and Policy Sciences
The University of Texas at Dallas
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Educational History

- November, 1991* Ph.D. in Computer Applications in Forestry. Dissertation title: *"A Justification of Negotiated National Forest Planning and the Development of a prototype Computerized Negotiated Planning Tool based on GIS and Simulation Techniques."* Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
- March, 1984* B.S. in Forest Recreation Management. Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

Professional Experience

- 2008-Present:* Professor and Head, Geography and Geospatial Information Sciences Programs, School of Economic, Political and Policy Science, University of Texas at Dallas, Richardson, Texas.
- 1997-2008:* Associate Professor of Forestry and Geospatial Science, Department of Forest, Range and Watershed Stewardship, Warner College of Natural Resources, Colorado State University, Fort Collins, Colorado.
- 1992-1997:* Assistant Professor of Forestry and Geospatial Science, Department of Forestry, College of Natural Resources, Colorado State University, Fort Collins, Colorado.
- 1991-1992:* Postdoctoral Research Associate, Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

Research Interests

- The development of combined artificial intelligence/geospatial analysis techniques to address geospatial problems.
- The development of spatial optimization techniques.
- Accuracy evaluation of spatial analysis.
- The development of new and refinement of existing spatial statistics.

Professional Memberships

- Member of the Association of American Geographers.
- Member of the American Society of Photogrammetry and Remote Sensing.
- Member of Xi Sigma Pi (Forestry honor society).
- Member of Sigma Xi (Scientific research society).

Achievements in Original Achievement, Investigation, and Research

Refereed Journal Articles in Press:

- Dean, Denis J. 2007. *Characterizing Spatial Databases via Their Derivation: A Complement to Content Ontologies*. **Transactions in GIS** 11(3): 399-412.
- Riggs, Philip D. and Denis J. Dean. 2007. *An Investigation into the Causes of Errors and Inconsistencies in Predicted Viewsheds*. **Transactions in GIS** 11(2): 175-196.
- Dean, Denis J. and Alicia C. Lizarraga-Blackard. 2007. *Modeling the Magnitude and Spatial Distribution of Aesthetic Impacts*. **Environment and Planning B** 34: 121-138.
- Dean, Denis J. 2005. *Measuring Arrangement Similarity Between Thematic Raster Databases Using a Quadtree-Based Approach*. **Lecture Notes in Computer Science** 3799: 125-141.
- Dean, Denis J. 2005. *Deriving New Minimum Cost Pathways from Existing Paths*. **Cartography and Geographic Information Science**. 32(1):47-60.
- Carmel, Yohay and Denis J. Dean. 2004. *Performance of a Spatial-Temporal Error Model for Raster Datasets Under Complex Error Patterns*. **International Journal of Remote Sensing**. 25(23):5283-5296.
- Dean, Denis J. 2004. *Toward a Differential Calculus for Temporal Map Analysis*. **Cartography and Geographic Information Science**. 31(2):89-101.
- Carmel, Yohay, Denis J. Dean and Curtis Flather. 2001. *Combining Location and Classification Error Sources for Estimating Multi-Temporal Database Accuracy*. **Photogrammetric Engineering and Remote Sensing**, 67(7):865-872.
- Maloy, Mark and Denis J. Dean. 2001. *An Accuracy Assessment of Various GIS-Based Viewshed Delineation Techniques*. **Photogrammetric Engineering and Remote Sensing**, 67(11):1293-1298.
- Blackard, Jock and Denis J. Dean. 1999. *Comparative Accuracies of Artificial Neural Networks and Discriminant Analysis in Predicting Forest Cover Types from Cartographic Variables*. **Computers and Electronics in Agriculture**, 24(2):131-151.
- Dean, Denis J. 1997a. *Improving the Accuracy of Forest Viewsheds Using Triangulated Networks and the Visual Permeability Method*. **Canadian Journal of Forest Research**, 27(7):969-977.
- Dean, Denis J. 1997b. *Finding Optimal Routes for Networks of Harvest Site Access Roads Using GIS-Based Techniques*. **Canadian Journal of Forest Research**, 27(1):11-22.
- Dean, Denis J., Kenneth R. Wilson and Curtis H. Flather. 1997. *Spatial Error Analysis of Species Richness for a Gap Analysis Map*. **Photogrammetric Engineering and Remote Sensing**, 63(10):1211-1217.
- Flather, Curtis H., Kenneth R. Wilson, Denis J. Dean and William C. McComb. 1997. *Identifying Gaps in Conservation Networks: Of Indicators and Uncertainty in Geographic-Based Analysis*. **Ecological Applications**, 7(2): 531-542.
- Dean, Denis J. 1994. *Computerized Tools for Use in Negotiated National Forest Planning*. **Journal of Forestry**, 92(2):37-40.
- Sojda, Richard A., Denis J. Dean and Adele E. Howe. 1994. *A Decision Support System for Wetland Management on National Wildlife Refuges*. **AI Applications**, 8(2):44-50.

Book Chapters:

- Dean, Denis J. 2002. *Geomatics for Wildlife Management*. Pages 326 – 350 in: Wildlife Viewing in North America: A Management Planning Handbook (M. J. Manfredi, editor.). Corvallis, Oregon: Oregon State University Press. 373 pages.
- Chandler, Sheri K., James D. Fraser, David A. Buehler, Denis J. Dean and Janis K. D. Seegar. 1994. *Using a Geographic Information System to Analyze Bald Eagle Habitat on the Chesapeake Bay, Maryland*. Pages 327 – 345 in: Raptor Conservation Today (B. U. Meyburg and R. D. Chancellor, eds). Buteo Books: Shipman, Virginia. 799 pages.

Full Papers Appearing in Refereed Conference Proceedings:

- Roggenbuck, Joseph W., Daniel R. Williams, Steven P. Bange and Denis J. Dean. 1991. *River Float Trip Encounter Norms: Questioning the Use of the Social Norms Concept*. **Journal of Leisure Research**, 23(2):133-153.
- Davis, Brett, and Denis J. Dean. 2000. *Identifying Likely Wildfire Ignition Points Using Topographic Analysis, Statistical Investigations, and Artificial Intelligence*. 7 page document in: Proceedings for the 3rd Southern Forestry GIS Conference (William G. Hubbard and J. B. Jordin, editors). Athens, Georgia. Published as a CD.
- Denis J. Dean. 2000. *Comparative Advantage and Spatial Interactions: Implications for GIS-Based Land Allocation Analysis*. 15 page document in: Proceedings for the 3rd Southern Forestry GIS Conference (William G. Hubbard and J. B. Jordin, editors). Athens, Georgia. Published as a CD.
- Dean, Denis J. and Patrick J. Pellicane. 2000. *Computing the Level of Fragmentation Present in a Landscape Using a Quad Tree Approach*. 7 page document in: Proceedings for the 3rd Southern Forestry GIS Conference (William G. Hubbard and J. B. Jordin, editors). Athens, Georgia. Published as a CD.
- Elaine M. Giroux and Denis J. Dean. 2000. *Neural Networks as an Alternative to Statistical Modeling in the Semivariogram Analysis Portion of CoKriging Procedures*. 9 page document in: Proceedings for the 3rd Southern Forestry GIS Conference (William G. Hubbard and J. B. Jordin, editors). Athens, Georgia. Published as a CD.
- Litschert, Sam and Denis J. Dean. 2000. *Identifying Regions at Risk for Landslides Using Combined Gis and Genetic Algorithm Procedures*. 7 page document in: Proceedings for the 3rd Southern Forestry GIS Conference (William G. Hubbard and J. B. Jordin, editors). Athens, Georgia. Published as a CD.
- Valdez, Jose and Denis J. Dean. 2000. *An Efficient Algorithm for Reconstructing Anisotropic Spread Cost Surfaces after Minimal Change to Unit Cost Structures*. 11 page document in: Proceedings for the 3rd Southern Forestry GIS Conference (William G. Hubbard and J. B. Jordin, editors). Athens, Georgia. Published as a CD.
- Blackard, Jock A. and Denis J. Dean. 1998. *Comparative Accuracies of Neural Networks and Discriminant Analysis in Predicting Vegetative Cover Types from Cartographic Variables*. Pages 189 – 200 in: Proceedings of the 2nd Southern Forestry GIS Conference (H. J-H. Whiffen and W. C. Hubbard, editors). Athens, Georgia. 339 pages.
- Dean, Denis J. and Sharon Allpress. 1998. *Detecting Spatial Correlations in the Presence of Confounding Factors: The Case of Recreation Sites and Spotted Knapweed Infestations*. Pages 165 – 174 in: Proceedings of the 2nd Southern Forestry GIS Conference (H. J-H. Whiffen and W. C. Hubbard, editors). Athens, Georgia. 339 pages.
- Dean, Denis J. and Peter Smith. 1998. *The Impacts of Alternative Formulations of Stand Adjacency Constraints in Integer Programming-Based Harvest Planning Models*. Pages 235 –

- 250 in: Proceedings of the 2nd Southern Forestry GIS Conference (H. J-H. Whiffen and W. C. Hubbard, editors). Athens, Georgia. 339 pages.
- Haire, Sandra L., Denis J. Dean and Carl E. Bock. 1998. *Incorporation of Spatial Dependence in Models of Bird Community Response to Landscape Pattern*. Pages 149 – 164 in: Proceedings of the 2nd Southern Forestry GIS Conference (H. J-H. Whiffen and W. C. Hubbard, editors). Athens, Georgia. 339 pages.
- Heimiller, Donna and Denis J. Dean. 1998. *Optimizing Placement of Prescribed Burns to Maximize Wildfire Burn Times to Points of Value in the Wildland/Urban Interface Zone*. Pages 265 – 278 in: Proceedings of the 2nd Southern Forestry GIS Conference (H. J-H. Whiffen and W. C. Hubbard, editors). Athens, Georgia. 339 pages.
- Maloy, Mark A. and Denis J. Dean. 1998. *Accuracy of Viewsheds Created Through Raster and Triangulated Irregular Network (TIN) Techniques*. Pages 315 – 324 in: Proceedings of the 2nd Southern Forestry GIS Conference (H. J-H. Whiffen and W. C. Hubbard, editors). Athens, Georgia. 339 pages.
- Blackard, Jock A. and Denis J. Dean. 1996. *Evaluating Integrated Artificial Neural Network and GIS Techniques for Predicting Likely Vegetative Cover Types*. Pages 151 – 159 in: Proceedings of the First Southern Forestry GIS Conference (Greg J. Arthaud and William C. Hubbard, editors). The University of Georgia. Athens, Georgia. 416 pages.
- Dean, Denis J. 1996a. *Finding Minimum Cost Routes for Access Roads to Single and Multiple Sites*. Pages 41 – 50 in: Proceedings of the First Southern Forestry GIS Conference (Greg J. Arthaud and William C. Hubbard, editors). The University of Georgia. Athens, Georgia. 416 pages.
- Dean, Denis J. 1996b. *Timber Harvest Scheduling Using Linked GIS and Operations Research Techniques: Current Status and Future Developments*. Pages 1 – 12 in: Proceedings of the First Southern Forestry GIS Conference (Greg J. Arthaud and William C. Hubbard, editors). The University of Georgia. Athens, Georgia. 416 pages.
- Dean, Denis J. and Duane B. Pool. 1996. *Optimizing Wildfire Mitigation Efforts Using Risk Based GIS*. Pages 124 – 132 in: Proceedings of the First Southern Forestry GIS Conference (Greg J. Arthaud and William C. Hubbard, editors). The University of Georgia. Athens, Georgia. 416 pages.
- Harvey, William and Denis J. Dean. 1996. *Computer Aided Visualization of Proposed Roads Using GIS and Neural Networks*. Pages 61 – 69 in: Proceedings of the First Southern Forestry GIS Conference (Greg J. Arthaud and William C. Hubbard, editors). The University of Georgia. Athens, Georgia. 416 pages.
- Hoffer, Roger M. and Denis J. Dean. 1996. *Geomatics at Colorado State University*. in: Remote Sensing: People in Partnership with Technology. Pages 37 - 45 in: Proceedings of the Sixth Forest Service Remote Sensing Applications Conference. American Society for Photogrammetry and Remote Sensing. Bethesda, Maryland. 448 pages.
- Joy, Suzanne M., Denis J. Dean and Richard T. Reynolds. 1996. *Developing a Predictive Model of Northern Goshawk (Accipiter gentilis atricapillus) Habitat Quality*. Pages 114 – 127 in: Proceedings of the 1996 Wildlife Society Annual Conference.
- Lizarraga, Alicia C. and Denis J. Dean. 1996. *Estimating the Effectiveness of Forest Buffers at Preserving Aesthetic Quality*. Pages 92 – 102 in: Proceedings of the First Southern Forestry GIS Conference (Greg J. Arthaud and William C. Hubbard, editors). The University of Georgia. Athens, Georgia. 416 pages.
- Dean, Denis J. 1989. *The Effects of Data Aggregation on Park Visitation Models*. Pages 90 – 101 in: Proceedings of the 1988 Southeastern Recreation Research Conference. Volume 10. (Cary

D. McDonald, editor). Institute for Behavioral Research, University of Georgia. Athens, Georgia. 179 pages.

Full Papers Appearing in non-Refereed Conference Proceedings:

Harvey, William and Denis J. Dean. 2001. *Computer Visualization of Proposed Roads Using GIS and Neural Networks*. Proceedings of the annual ESRI User Conference. Redlands, California.
Dean, Denis J. 1999. *A GIS-Based Approach to Determining Migratory Patterns*. Annual INFORMS meeting, Cincinnati, Ohio.

Significant Web-based Writing:

Geodesy, Cartography and Map Reading. (http://www.cnr.colostate.edu/class_info/nr502). This web site was originally intended to serve a purely web-based class (tentatively number NR502) that would introduce graduate students to the basics of geospatial sciences. This class was cancelled in 2002, but the first third of the class material is still available on the web. This material continues to generate positive feedback from individuals from all over the world. A recent issue of the *ACSM Bulletin* cites this site as a “definitive information source with excellent graphics” (*ACSM Bulletin* no. 225, February 2007, page 53).

Invited Professional Presentations:

Geospatial Information Science: What is it, and what can it do for you? Beyond Borders Global Marketing Summit, April 15, 2009. Dallas, Texas.
Multifaceted Descriptions for Complex Entities: Why the National Map Needs Multiple, Automatically Generated Ontologies. University Consortium for Geographic Information Science/U.S. Geological Survey Special Conference on Ontology for the National Map. February 3-4, 2009. Washington, D.C.
Finding Near-Optimal Locations for Wildfire Fuel Treatment Activities. 2003 GIS in the Rockies Conference, Denver, Colorado.
Neural Networks as an Alternative to Statistical Modeling in the Semivariogram Analysis Portion of Kriging Procedures. 2001 INFORMS meeting, Miami Beach, Florida.
A Comparison of Genetic Programming and Linear Discriminant Analysis Techniques to Identify Regions at Risk for Landslides. 2001 INFORMS meeting, Miami Beach, Florida.
An Accuracy Assessment of Various GIS-Based Viewshed Delineation Techniques. 2001 GIS in the Rockies Conference, Denver, Colorado.
Spatial Modeling and Process Analysis: Some (But Not All) Possibilities for Sophisticated Spatial Modeling and Analysis. 2001. Presented to federal, state and local natural resource managers and university faculty, Guadalajara, Mexico.
Geospatial Science as an Integrating Tool for Protected Area Management. 2000. Presented to federal and state park service staff and university faculty, University of Sassari, Sardinia, Italy.
Geospatial Science for Watchable Wildlife Management. 2000. Presented to State and Federal wildlife managers, Winter Park, Colorado.
Combined GIS and Optimization Techniques for Simultaneous Spatial and Temporal Timber Harvest Planning. 1998 INFORMS meeting. Montreal, Canada.
Building Spatial Databases: Field Surveys, Remote Sensing and Spatial Interpolation. 1998. Presented to the faculty and students of the Centro Agronomico Tropical De Investigacion Y Ensenanza (CATIE), Turrialba, Costa Rica.

Spatial Model Building Using Integrated and Parallel Software Systems. 1998. Presented to the faculty and students of the Centro Agronomico Tropical De Investigacion Y Ensenanza (CATIE), Turrialba, Costa Rica.

Spatial Optimization for Timber Harvest Scheduling. 1997. Presented to the National Taiwanese University. Taipei, Taiwan.

Forest Viewshed Delineation. 1997. Presented to the Taiwan Forest Research Institute. Nanhshi, Taiwan.

Geomatics at Colorado State University. 1996. Sixth Forest Service Remote Sensing Applications Conference. Denver, Colorado.

GIS Applications in Business. 1996. Modern Marketing Form 1996. Fort Collins, Colorado.

GIS Basics for Natural Resource Managers. 1996. International Forestry Seminar. Fort Collins, Colorado.

GIS in Academia. 1996. Bentley Geoengineering Summit, 1996. Copper Mountain, Colorado.

Spatial Modeling Using GIS. 1996. Indexing Resource Data for Forest Health Decision Making. Pingree Park, Colorado.

A Case Study of Creating a Multi-Agency Spatial Data Library: The CORRC Example. 1995. GIS/LIS 1995. Nashville, Tennessee.

Introduction to GIS. 1994. Minorities in Forestry (MINFORS) Annual Convention. Fort Collins, Colorado.

GIS as a Vehicle for Negotiated National Forest Planning. 1994. USFS Community Planning Workshop. Ithaca, New York.

GIS in Natural Resource Planning. 1994. Soil Conservation Service Regional Urban Forestry Conference. Colorado Springs, Colorado.

Remote Sensing and GIS Programs at Colorado State University. 1994 (Standing in for Dr. Roger Hoffer). GIS in the Rockies. Golden, Colorado.

GIS in Natural Resource Management. 1993. Presented at multiple locations and to multiple audiences during a two-week trip throughout the southern portions of Brazil.

GIS and Dynamic Programming for Land Management Planning. 1993. USFS Applications of GIS for Spatial Analysis to Support Land Management Planning. Fort Collins, Colorado.

The Need for Ecosystem Management Tools that Explain and Simplify. 1993. Ecosystem Management: Beyond the Rhetoric. Fort Collins, Colorado.

Spatial Optimization for Natural Resource Management. 1993. University of Wyoming Seminar Series on GIS. Laramie, Wyoming.

Funded Research Projects:

<i>4/1/08-4/1/11</i>	<i>Linking Watershed Characteristics with Flow Regime & Geomorphic Context to Diagnose Water Quality Impairment at Multiple Scales – Phase II.</i> (this project has been approved by the funding agency, but has not yet started) Environmental Protection Agency. Co-PI. \$504,000
<i>11/1/03-10/31/07</i>	<i>Linking Watershed Characteristics with Flow Regime & Geomorphic Context to Diagnose Water Quality Impairment at Multiple Scales.</i> U.S. Environmental Protection Agency. Co-PI. \$624,536
<i>9/1/00 - 8/31/02</i>	<i>Landscape Characterization Over Time.</i> USDA Forest Service, Rocky Mountain Research Station. Sole PI. \$55,115.
<i>4/19/00 - 1/31/02</i>	<i>Template for the Development of a SNAP-like Software Program for USFS Project-Level Planning.</i> USDA Forest Service, Rocky Mountain Research Station. Sole PI. \$79,540.
<i>6/1/99 - 4/30/01</i>	<i>Development of a Flexible, Standardized Methodology for Optimizing Fuel Treatment Program Across Space and Time.</i> Joint Fire Science Program. Sole PI. \$105,021.

5/1/99 - 9/30/01	<i>Inventorying and Monitoring Natural Resources Status and Trends in the National Park System.</i> USDI National Park Service. Sole PI. \$52,681.
8/1/97 - 8/1/98	<i>Spatially Explicit Models of Oak Woodland Landscapes in California and Israel: Do Successional Patterns Converge? - Phases I, II and III.</i> USDA Forest Service/Jewish National League. Sole PI. \$117,000.
10/24/96 - 3/1/97	<i>Building an Interactive Map Composition System on the World Wide Web.</i> Colorado Advanced Technologies Institute. Sole PI. \$8,550.
8/15/97-12/16/97	<i>GIS Training for Turkish Hydrologists.</i> CSU Consortium for International Development. Sole PI. \$7,172.
7/15/96 - 10/1/96	<i>Development of Spatially Referenced Datasets from Historic Forest Inventory Data.</i> USDA Forest Service, Rocky Mountain Station. Sole PI. \$8,000.
6/1/96 - 6/1/97	<i>Developing An Interagency Spatial Data Library at Colorado State University.</i> Colorado Rockies Regional Cooperative (The Nature Conservancy). Sole PI. \$23,812.
3/1/96 - 8/31/96	<i>Wildlife Habitat Identification in the North Park Region.</i> Colorado Division of Wildlife. Sole PI. \$12,942.
2/1/96 - 11/15/96	<i>ARC Information on the South Platte Basin.</i> Colorado Division of Wildlife. Sole PI. \$18,000.
2/1/96 - 11/15/96	<i>GIS Database Development for the South Platte Basin.</i> Colorado Division of Wildlife. Sole PI. \$15,014.
4/1/95 - 9/30/96	<i>Development of a Spatial Aid for Fire Evaluation.</i> USDA Forest Service, Arapahoe/Roosevelt National Forest. Sole PI. \$18,000.
4/1/95 - 9/30/96	<i>Predicting Reference Condition in the Ponderosa Pine Ecotone: An Expert Systems Approach.</i> USDA Forest Service, Rocky Mountain Station. Sole PI. \$5,000.
3/1/95 - 3/1/96	<i>Evaluating Environmental Restrictions on Timber Harvesting: A Cost Effectiveness Approach -- Phase II.</i> National Council of the Pulp and Paper Industry for Air and Stream Improvement. Co-PI. \$25,000.
1/1/95 - 3/1/96	<i>Course Land Use Mapping From Satellites -- Phase I and Phase II.</i> USDA Forest Service, Regional Office. Sole PI. \$48,000.
4/1/94 - 8/1/95	<i>Development of a Land use/Land Cover Map for the Rio Grande Basin.</i> USDA Forest Service, Regional Office. Sole PI. \$11,080.
4/1/94 - 7/31/95	<i>Land Use, Water Availability and Water Demand Relationships in the Rio Grande Basin.</i> US Geological Survey. Sole PI. \$37,000.
3/1/94 - 3/1/95	<i>Evaluating Environmental Restrictions on Timber Harvesting: A Cost Effectiveness Approach -- Phase I.</i> National Council of the Pulp and Paper Industry for Air and Stream Improvement. Co-PI. \$25,000.
1/1/94 - 8/31/95	<i>Use of Spatial Data in Developing a Multiple Resource Management Plan for State Properties in the Cameron Pass Area.</i> Colorado State Forest Service. Sole PI. \$26,500.
10/7/93 - 9/30/94	<i>Development of Linkages Between Optimization and GIS Techniques.</i> USDA Forest Service, Rocky Mountain Station. Sole PI. \$25,000.
10/7/93 - 7/1/94	<i>Mining and Water Quality: Abandoned and Inactive Coal Mines.</i> USDA Forest Service, Rocky Mountain Station. Sole PI. \$12,778.
7/1/93 - 6/30/94	<i>Evaluating GAP Analysis: A GIS-Based Strategy for Conserving Biological Diversity.</i> USDA Forest Service, Rocky Mountain Station and National Council of the Pulp and Paper Industry for Air and Stream Improvement. Co-PI. \$25,000.

Professional and University Citizenship

- Head of the Geography and Geospatial Information Sciences Programs
- Chair of the EPPS School Personnel Review Committee
- Developed and implemented the Geospatial Information Sciences Bachelor of Science degree program.