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**TEACHING INTERESTS:**

- Spatial Analysis and Modeling
- Applications of Geographical Information Systems

**RESEARCH INTERESTS:**

- Spatial Case-based Reasoning and Spatial Similarity
- Terrain Analysis
- Point Pattern Analysis
- Kernel Methods
- Integration of GIS and Artificial Intelligence
- Digital Soil Mapping
- Health-related Spatial Analyses
- Energy-related Spatial Analyses
- Web-based Participatory GIS

**EDUCATION:**

**Ph.D.** May 2002. Department of Geography, University of Wisconsin-Madison. “A Case-based Reasoning Approach to Fuzzy Soil Mapping”.

**M.Phil.** December 1998. Center of Urban Planning and Environmental Management, University of Hong Kong. “Integrating Case-based Reasoning and GIS for Urban Planning”.

**M.S.** June 1994. Institute of Geography, Chinese Academy of Sciences. “Agroforestry: An Effective Approach to Soil-Water Conservation in the Three-Gorge Area of China”.

**B.S.** June 1991. Department of Geography, Beijing University. “Landscape Ecological Study on the Macaque (*Macaca mulatta*) Reserve of Jiuyan County, Henan Province, China”.

**PEER REVIEWED JOURNAL PAPERS:**

Shi, X., Long, R., Dekett, R., and McKay, J., Integrating Different Types of Knowledge for Digital Soil Mapping, *Soil Science Society of America Journal*. Accepted.

- Onega, T., Duell, E., **Shi, X.**, Wang, D., Demidenko, E., and Goodman, D., Geographic Access to Cancer Care in The United States, *Cancer*. Accepted.
- Yang, Q., Li, X., and **Shi, X.**, Cellular Automata for Simulating Land Use Changes Based on Support Vector Machines, *Computer and Geoscience*. Accepted.
- Liu, X., Li, X., and **Shi, X.**, Wu, S., and Liu, T., Simulating Complex Urban Development Using Kernel-Based Nonlinear Cellular Automata, *Ecological Modelling*, doi:10.1016/j.ecolmodel.2007.08.024.
- Shi, X., Elmore, A.J., Li, X., Gorence, N.J., Jin, H., Zhang, X., and Wang, F., Using Spatial Information Technologies to Select Sites for Biomass Power Plants: A Case Study in Guangdong, China, *Biomass and Bioenergy*, doi:10.1016/j.biombioe.2007.06.008.
- Elmore, A.J., **Shi, X.**, Gorence, N.J., Li, X., Jin H., Wang, F., Zhang, X., Spatial Distribution of Agricultural Residue from Rice for Potential Biofuel Production in China, *Biomass and Bioenergy*, doi:10.1016/j.biombioe.2007.06.005.
- Shi, X., Duell, E., Demidenko, E., Onega, T., Wilson, B., and Hoftiezer, D., 2007, A Polygon-based Locally Weighted Average Method for Smoothing Disease Rates of Small Units, *Epidemiology*, **18**(5): 523-528.
- Shi, X., 2007, Evaluating the Uncertainty Caused by P.O.Box Addresses in Environmental Health Studies: A *restricted* Monte Carlo Approach, *International Journal of Geographical Information Science*, **21**(3): 325-340.
- Shi, X., Zhu, A-X., Burt, J., Choi, W., Wang, R-X., Pei, T., and Li, B-L., 2007, An Experiment with Circular Neighborhood in the Calculation of Slope Gradient from DEM, *Photogrammetric Engineering & Remote Sensing*, **73**(2): 143-154.
- Shi, X., Hoftiezer, D., Duell, E., and Onega, T., 2006, Spatial Association between Residential Radon Concentration and Bedrock Types in New Hampshire, *Environmental Geology*, **51**(1): 65-71.
- Shi, X., Zhu, A-X., Burt, J., Qi, F., and Simonson, D., 2004, A Case-based Reasoning Approach to Fuzzy Soil Mapping. *Soil Science Society of America Journal*, **68**: 885-894.
- Yeh, A. G. O. and **Shi, X.**, 2001, Case-based Reasoning (CBR) in Development Control. *International Journal of Applied Earth Observation and Geoinformation*, **3**: 238-251.
- Shi, X. and Yeh, A. G. O., 1999, The Integration of Case-Based Systems and GIS in Development Control. *Environment and Planning B: Planning and Design*, **26**: 345-364.
- Yeh, A. G. O. and **Shi, X.**, 1999, Applying case-based reasoning to urban planning: a new planning support system tool. *Environment and Planning B: Planning and Design*, **26**: 101-116.

### **BOOK CHAPTERS:**

Shi, X., Zhu, A-X., and Wang, R-X., 2005, Fuzzy Representations of Special Terrain Features using a Similarity-based Approach. Cobb, M., Petry, F., and Robinson, V. (eds.), *Fuzzy Modeling with Spatial Information for Geographic Problems*, Springer-Verlag, pp. 233-251.

Yeh, A. G. O. and **Shi, X.**, 2001, The Application of Case-based Reasoning in Development Control, in Geertman, S. and Stillwell, J. (eds.), *Planning Support Systems in Practice*. Berlin: Springer-Verlag, pp. 223-248.

### **NON-REFEREED PAPERS:**

Qin C, Zhu, A-X., **Shi, X.**, Li, B., Zhou, C., Pei, T., Fuzzy representation of spatial gradation of slope position. International Symposium on Terrain Analysis and Digital Terrain Modeling, Nanjing, China, Nov. 23-25, 2006.

Shi, X., 2005, Mapping Infectious Disease: Using SARS Maps as Examples, *GIS Development*, **9**(6): 30-32.

Zhu, A-X. and **Shi, X.**, 2005, Quantification of Detail Spatial Gradation of Terrain Position Using Fuzzy Logic and GIS Techniques. In Y. Liu, G. Chen, M. Ying (eds.): *Fuzzy Logic, Soft Computing and Computational Intelligence: Eleventh International Fuzzy Systems Association World Congress*, vol. 2, pp. 1200-1204. Tsinghua University Press & Springer, Beijing 2005. - Presented at the 11th IFSA World Congress, Beijing 2005.

Yeh, A.G.-O. and **Shi, X.**, 1998, The Integration of Case-based Reasoning and GIS for Handling Planning Applications in Hong Kong, in Sikdar, P. K., Dhingra, S. L. and Krishna Rao, K. V. (eds.), *Computers in Urban Planning and Urban Management, Vol. 2*, New Delhi: Narosa Publishing House.

Yeh, A.G.-O. and **Shi, X.**, 1997, An Experimental System in Integrating Case-based Reasoning and GIS for Processing Planning Applications in Hong Kong, in the *Proceedings of GIS AM/FM ASIA '97 & Geoinformatics '97: Mapping the Future of Asia-Pacific*, Taipei, Taiwan.

### **GRANTS:**

2005, *United States Department of Agriculture – Natural Resources Conservation Service*, Geographic Information System (GIS) and Artificial Intelligence (AI) Based Approach for Automated Soil Mapping (Contract No. 53-7482-5-466), \$69,816 for three years, PI: Xun Shi.

2005, *Rockefeller Center at Dartmouth College*, Social Science–Public Policy Grant: Utilization and Impact of Advanced Biomass Energy Production in China, \$17,466 for one year, PI: Xun Shi.

2004, *Rockefeller Center at Dartmouth College*, Public Responses to the Results of an Environmental Health Research, \$2,500 for one year, PI: Xun Shi.

2003, *National Institute of Health*, Environmental Epidemiology of Lung Cancer in New Hampshire: A Multilevel Approach using GIS and Case-Control Method, \$1,900,000 for 5 years, PI: Eric Duell, Co-PI: **Xun Shi**.

2003, *Rockefeller Center at Dartmouth College*, Using GIS in Environmental Health, \$2,500 for one year, PI: Xun Shi.

#### **HONORS AND AWARDS:**

Dartmouth College: Junior Faculty Fellowship (2005)

Department of Geography, University of Wisconsin-Madison: The Meritorious Teaching Award (2001).

The Remote Sensing, GIS, and Cartography Specialty Groups, The Association of American Geographers: The first place award of the student illustrated paper competition (2001).

The University of Hong Kong: Scholarship (1995 – 1997).

#### **PRESENTATIONS:**

Shi, X., October 18, 2007, “Spatial Information Technologies in Biomass Energy Planning”, Rockefeller Center for Public Policy and the Social Sciences, Dartmouth College.

Onega, T. Duell, E., Demidenko, E., **Shi, X.**, and Goodman, D., November 2007, “Access, utilization, and mortality in relation to specialized cancer care for African American and Caucasian Medicare cancer patients in the United States (1998-2002)”, AACR Conference on the Science of Cancer Health Disparities, Atlanta GA.

Sloan, C.D., Eros, E., and **Shi, X.**, October 16, 2007, “A GIS-based Analysis of the Association between Lung Cancer Incidence and SuperFund Sites in New Hampshire”, 2007 New England Membrane Enzyme Group (NUTMEG) Conference, Woods Hole, Massachusetts.

Shi, X., July 23, 2007 (invited), “Spatial Analysis of Lung Cancer Incidence in New Hampshire”, State Department of Health and Human Services, New Hampshire.

Shi, X., 2007, “A GeoComputational Procedure for Characterizing the Spatial Pattern of Lung Cancer Incidence in New Hampshire”, The Annual Meeting of American Association of Geographers, Abstract of 103<sup>rd</sup> Annual Meeting, San Francisco.

Alford-Teaster, J., **Shi, X.**, Wang, D., and Onega, T., 2007, “Assess the Access to Cancer Care Facilities in the US”, The Annual Meeting of American Association of Geographers, Abstract of 103<sup>rd</sup> Annual Meeting, San Francisco.

Shi, X., February 11, 2007 (invited), “Bring the Globe to Fingertips: Teaching Geography with GIS”, Dartmouth Alumni Club and Affiliated Group Officers Weekend (CAGOW).

Shi, X., September 27, 2006 (invited), “Knowledge-based Raster Mapping and SIE”, USDA-NRCS Vermont-New Hampshire Digital Soil Mapping Workgroup Meeting, New Port, VT.

Shi, X., 2006, Aggregating Operations in Fuzzy Soil Inference, The Annual Meeting of American Association of Geographers, Abstract of 102<sup>nd</sup> Annual Meeting, Chicago.

Hoftiezer, D., and **Shi, X.**, 2006, Spatially Smoothing Lung Cancer Rates in New Hampshire: A Comparison of Techniques, The Annual Meeting of American Association of Geographers, Abstract of 102<sup>nd</sup> Annual Meeting, Chicago.

Shi, X., 2005, Mapping Disease Density over an Inhomogeneous at-risk Background, The Annual Meeting of American Association of Geographers, Abstract of 101<sup>st</sup> Annual Meeting, Denver.

Hoftiezer, D., and **Shi, X.**, 2005, Study of Correlation between Household Radon Concentration and Bedrock Type, The Annual Meeting of American Association of Geographers, Illustrated paper of 101<sup>st</sup> Annual Meeting, Denver.

Shi, X., 2004, Evaluating Spatial Correlation through Surface Comparison, The Annual Meeting of American Association of Geographers, Abstract of 100<sup>th</sup> Annual Meeting, Philadelphia.

Shi, X., 2003, A similarity-based method for deriving fuzzy representations of terrain positions, The Association of American Geographers, Abstract of 99<sup>th</sup> Annual Meeting. New Orleans.

Shi, X. and Zhu, A-X., 2002, Integrating general knowledge with location specific knowledge for knowledge-based fuzzy soil mapping, American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, Abstract of Annual Meetings 2002, Indianapolis.

Shi, X. and Zhu, A-X., 2000, Case-based Reasoning for Soil Mapping, Association of American Geographers, Abstract of 96<sup>th</sup> Annual Meeting, Pittsburgh.

Shi, X. and Zhu, A-X., 1999, A Case-Based Reasoning Approach to Soil Mapping under Fuzzy Logic: the Concept, in *Proceedings of International Symposium on Geoinformatics & Socioinformatics and Geoinformatics '99*, University of Michigan, Ann Arbor, MI.

## **TEACHING EXPERIENCE:**

### **Courses:**

Assistant Professor, July 2002 – present, The Department of Geography, Dartmouth College.

- Introduction to Geographical Information Systems (GIS)

- Environmental Applications of GIS
- Urban Applications of GIS

Lecturer, January 2001 – January 2002, Department of Geography, University of Wisconsin-Madison.

- Introduction to Geographical Information Systems.

Teaching Assistant, January 2000 – December 2000, Department of Geography, University of Wisconsin-Madison.

- Introduction to Geographical Information Systems
- Applications of GIS
- Spatial Analysis.

### **WORK EXPERIENCE:**

Research Assistant, June 1999 – May 2002, “Knowledge-Based Approaches to Resource Mapping with Fuzzy Logic”, The Natural Resources Conservation Service, U.S. Department of Agriculture (Agreement No. 69-5F48-9-00186). PI: A-Xing Zhu,

Project Assistant, July 1998 – December 1999, “Building GIS database for the Land Information Office of Columbia County, Wisconsin”, “Building GIS database for the Madison City Metro Bus Company”. PI: A-Xing Zhu.

Research Assistant, September 1997 – May 1998, “Soil Mapping Using GIS with Fuzzy Logic”, Graduate School of University of Wisconsin-Madison. PI A-Xing Zhu.

Assistant Researcher, September 1994 – December 1995, The State Key Laboratory of Resources and Environment Information System, Beijing, China.

Research Assistant, September 1992 – December 1994, “The Amelioration of Slope Lands in East China”, The National Natural Science Foundation of China. PI: Du Zheng.

Research Assistant, May 1990 – June 1991, “An Landscape Ecology Study on the Taihang-Wangwu Mountainous Area, China”, The National Natural Science Foundation of China. PI: Changdu Chen.

### **REVIEWER**

- The Professional Geographer
- Soil Science Society of America Journal
- Geoderma
- Pedosphere
- Landscape and Urban Planning