

Wei Luo

Curriculum Vitae

302 Walker Building Office #206

GeoVISTA Center, Department of Geography

The Pennsylvania State University

University Park PA 16802

Email: wul132@psu.edu

Phone: (716)472-2021

Homepage: <http://www.personal.psu.edu/wul132/>

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Research interests: Cartography, Geovisualization, Geo-Social Visual Analytics, Web GIS, Spatial Analysis, Social Network Analysis, Machine Learning, and Epidemic Modeling with applications to the geographic components of Spatial Epidemiology/Public Health, International Trade, Intelligence Analysis, Crime Analysis, and Crisis Management.

EDUCATION

- | | |
|--------------------|---|
| 2014
(expected) | Doctor of Philosophy: Geography (ABD)
<i>The Pennsylvania State University</i>
Thesis: Geovisual Analytics Approaches for the Integration of
Geography and Social Network Contexts
Advisor: Dr. Alan M. MacEachren |
| 2009 | Master of Arts: Geography
<i>University at Buffalo</i>
Thesis: Individual-based Modeling for SARS Transmission
Advisor: Dr. Ling Bian |
| 2007 | Bachelor of Science: Urban and Environmental Science
Northwest University, China |

PUBLICATIONS

Refereed Publications

12. **Luo W** (under preparation) GeoSocial Agent-Based Epidemic Visual Analytics. *International Journal of Geographical Information Science*.
11. **Luo W**, Yuan M. (under preparation) Spatial-Temporal Dimensions of International Trade. *International Journal of Geographical Information Science*.
10. Robinson AC, Hardisty F, Stehle S, **Luo W**, and Peuquet DJ. (in revision) Geovisualization of T-Pattern Event Sequences in STempo. *International Journal of Geographical Information Science*.
9. Peuquet DJ, Robinson AC, and **Luo W**. (in revision) A method for discovery and analysis of temporal patterns in complex event data. *International Journal of Geographical Information Science*.
8. **Luo W**, Yin PF, Di Q, Hardisty F, and MacEachren AM. (2014) A Geovisual Analytic Approach to Understanding Spatial-Social Relationships in the

- International Trade Network. *PLOS ONE*. In press.
7. **Luo W**, MacEachren AM. (2014) Geo-Social Visual Analytics. *Journal of Spatial Information Science*. In press.
 6. Roth RE, Ross KS, Finch BG, **Luo W**, and MacEachren AM. 2013. Spatiotemporal crime analysis in U.S. law enforcement agencies: Current practices and unmet needs. *Government Information Quarterly*.
 5. Blanford JI, Kumar S, **Luo W**, and MacEachren AM. 2012. It's a long, long walk: accessibility to hospitals, maternity and integrated health centers in Niger. *International Journal of Health Geographics*. 11(24).
 4. **Luo W**, MacEachren AM, Yin PF, and Hardisty F. 2011. Spatial-Social Network Visualization for Exploratory Data Analysis. In: *Proceedings of 3rd ACM SIGSPATIAL International Workshop on Location-Based Social Networks (LBSN 2011), 19th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS 2011)*. Illinois, Chicago: November 1-4.
 3. Savelyev, A, Janowicz, K, Thatcher, J, Xu, S, Mülligann, C, and **Luo, W**. 2011. Volunteered Geographic Services: Developing a Linked Data Driven Location-based Service. In: *SIGSPATIAL International Workshop on Spatial Semantics and Ontologies in conjunction with the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS 2011)*. Illinois, Chicago: November 1-4.
 2. Thatcher, J, Mülligann, C, **Luo, W**, Xu, S, Guidero, E, and Janowicz, K. 2011. Hidden ontologies - how mobile computing affects the conceptualization of geographic space. In: *Proceedings of Workshop on Cognitive Engineering for Mobile, Conference on Spatial Information Theory: COSIT'11*. Belfast, Maine: September 12-16.
 1. Chen WL, Wu XS, **Luo W**, Yang XJ, and Zhao R. 2007. Risk Analysis of Land Use of large historic sites in the suburb—A case Study of Chang'an City of Han Dynasty. *Resources Science*. 29(3) : 198-205.

Refereed Extended Abstract

1. Roth RE, Ross KS, Finch BG, **Luo W**, and MacEachren AM. 2010. A user-centered approach for designing and developing spatiotemporal crime analysis tools. In: *Proceedings of GIScience 2010*. Zurich, Switzerland: September 15.

PRESENTATIONS, PANEL, POSTER, AND SESSION ORGANIZATION

Invited Presentations

4. **Luo W**. 2014. A Geovisual Analytic Approach to Understanding Spatial-Social Relationships in the International Trade Network. In: *Network Science Seminars*. University Park, PA: Feb 4.
3. **Luo W** 2013. A Geo-Social Visual Analytic Approach in the International Trade Network. In: *Geography 597A – Visual Analytics: Leveraging GeoSocial Data in Penn State University*. University Park, PA: October 17.

2. **Luo W** 2012. Geo-Social Visual Analytics with Applications to Catastrophic Risk Management. In *Global Catastrophic Risk institute*. October 24.
1. **Luo W** 2012. Geo-Social Visual Analytics. In: *Geography 597B – Visual Analytics: Leveraging GeoSocial Data in Penn State University*. University Park, PA: October 10.

Refereed Presentations

2. **Luo W** and MacEachren AM. 2012. Geovisual Analytics Approaches for the Integration of Geography and Social Network Contexts. In: *Doctoral Colloquium VisWeek 2012*. Seattle, Washington. October 14-19.
1. **Luo W** and MacEachren AM. 2012. The Integration of Geography and Social Network Contexts. In *UCGIS 2012 Symposium*. Washington, D.C. May 30-June 1.

Conference Presentations

10. **Luo W**, MacEachren AM. 2014. Geo-Social Visual Analytics. *The 110th Annual Meeting of the Association of American Geographers*. Tampa: Apr 8-12.
9. Peuquet, DJ, Stehle S, Hardisty F, Robinson A, **Luo W**, Di Q, Yang JI. 2013. STempo: An Integrated Statistical and Visualization Environment for Discovery and Analysis of Patterns in Complex Space-Time Event Data. *National Geospatial-Intelligence Agency (NGA) fall symposium*. Washington, DC.
8. **Luo W**, Yuan M. 2013. Spatial Dimensions of International Trade. *The 109th Annual Meeting of the Association of American Geographers*. Los Angeles: Apr 9.
7. Peuquet, DJ, Hardisty F, Robinson A, Stehle S, **Luo W**, Di Q, Yang JI. 2012. STempo: An Integrated Statistical and Visualization Environment for Discovery and Analysis of Patterns in Complex Space-Time Event Data. *National Geospatial-Intelligence Agency (NGA) fall symposium*. Washington, DC.
6. **Luo W**, Yin PF, Hardisty F, and MacEachren AM. 2012. Understanding How Dynamic Social Interaction Shapes the Space: A Geovisual Analytic Approach. *The 108th Annual Meeting of the Association of American Geographers*. New York: Feb 24.
5. **Luo W**, Yin PF, Hardisty F, Blanford J, and MacEachren AM. 2011. Spatial social network visual analytic tool. *The 107th Annual Meeting of the Association of American Geographers*. Seattle: April 15.
4. **Luo W**, Blanford J, Hardisty F, and MacEachren AM. 2010. A hierarchical framework to understand the characteristics of measles transmission. *The 106th Annual Meeting of the Association of American Geographers*. Washington, DC: April 15.
3. Roth RE, Ross KS, **Luo W**, Finch BJ, and MacEachren AM. 2010. A user-centered approach to extending spatiotemporal crime analysis tools. *The 106th Annual Meeting of the Association of American Geographers*. Washington, DC: April 15.
2. Ross KS, Roth RE, Finch BG, **Luo W**, McCabe CA, and MacEachren AM. 2010. Web-based geovisualization and geovisual analytics to support crime analysis. *Department of Homeland Security Summit*. Washington, DC: March 9.
1. **Luo W**, Mao L. 2009 "A two-layer scale-free network for the spread of infectious

diseases" *The 105th Annual Meeting of the Association of American Geographers*. Las Vegas. March 22-27.

Conference Posters

4. **Luo W**, MacEachren AM, Yin PF, and Hardisty F, 2012. Understanding Social and Spatial Relationships in the International Trade Network: A Geovisual Analytic Approach. *EMS Graduate Student Poster Exhibition in Penn State University*. University Park, PA: September 20.
3. **Luo W**, MacEachren AM, Yin PF, and Hardisty F, 2012. GeoSocialApp: A Visual Exploratory Data Analysis Tool for Spatial-Social Network. CyberGIS'12 Poster Exhibition. Champaign, IL: August 7.
2. **Luo W**, MacEachren AM, Yin PF, and Hardisty F, 2012. Understanding Social and Spatial Relationships in the International Trade Network: A Geovisual Analytic Approach. *2012 Graduate Exhibition in Penn State University*. University Park, PA: March 25.
1. **Luo W**, MacEachren AM, Yin PF, and Hardisty F, 2011. GeoSocialApp: A Visual Exploratory Data Analysis Tool For Spatial-Social Network. *EMS Graduate Student Poster Exhibition in Penn State University*. University Park, PA: September 29.

Panel

1. Research Design in Physical Geography and GIScience, 2012 In: *No)Boundaries Interdisciplinary Student Conference*. University Park, PA: March. 31.

Session Organization

1. Co-organize a series of sessions, 2013. Spatial/Spatiotemporal Data Mining and Visualization. *109th Annual Meeting of the Association of American Geographers*. Los Angeles, CA: April 9-13.

TEACHING EXPERIENCE

2014	Instructor <i>Department of Geography, Penn State University</i> Geography 160 Web (Mapping Our Changing World —one semester)
2013	Laboratory Teaching Assistant <i>Department of Geography, Penn State University</i> Geography 160 (Mapping Our Changing World —one semester)
2010-2012	Laboratory Teaching Assistant <i>Department of Geography, Penn State University</i> Geography 363 (Geographic Information Systems—four semesters)

Invited Lectures

3. **Luo W.** 2014. Exploratory Geovisualization EDA, ESDA, and Interacting with Data
In: *Geography 461W: Dynamic Cartographic Representation (geovisualization)*
University Park, PA: Feb 14.
2. **Luo W.** 2013. Introduction to Geovisualization. In: *Geography 160 (Mapping Our Changing World)*. University Park, PA.
1. **Luo W.** 2012. Geovisualization. In: *Geography 363 (Geographic Information Systems)*. University Park, PA.

PAST WORK EXPERIENCE

2009-Present

Research Assistant

GeoVISTA Center, Penn State University

Projects include [Vaccine Modeling Initiative](#) (Fall 2009 to Fall 2011), [GeoSocialApp](#) (Fall 2010 to present), [PSUMobile](#) (Spring 2011 to Summer 2011), Vaccine: Visual Analytics for Command, Control, and Interoperability Environments Center of Excellence ([CrimeViz](#) and [Senseplace2](#)) (Fall 2009 to present), [STempo](#) (Spring 2012 to present). Projects are supervised by Dr. Alan MacEachren, Dr. Donna Peuquet, Dr. Krzysztof Janowicz, and myself. Duties include design and development of geo-visual analytic applications with Java, Javascript, Servlet, and PostgreSQL, and epidemic models with R and Matlab, user interface evaluation, authorship/co-authorship of numerous publications, posters, and reports.

2008

Student Assistant

ESRI International User Conference.

2006-2007

Research Student

Northwest University

Projects include National Natural Science Fund on Topographic Factors based on Regional Soil Loss DEM, Settlement Observation of XIAN Project, and World Bank Shaanxi Urban Transport Project. Projects are supervised by Dr. Mudan Zhao, Dr. Tianwen Li and Dr. Mingming Cao. Duties include design of questionnaire, collection of field survey data, report writing, and spatial data analysis with ArcGIS.

2006-2007

Project Manager and Cartographer

Chang'an Cultural Relics Bureau

Heritage Tourism Map of Chang'an District Project. Duties include cartographic design and development with CorelDraw.

Honors & Awards

6. **Best Presentation** from National Geospatial-Intelligence Agency (NGA) fall symposium 2013. Nominated along with DJ. Peuquet, S Stehle, F Hardisty, A Robinson, **W Luo**, Q Di, JI Yang for the title: STempo: An Integrated Statistical and Visualization Environment for Discovery and Analysis of Patterns in Complex Space-Time Event Data.
5. **Academic Enrichment Award** from the **Ruby S. Miller Endowment Fund** 2012. Received for the title: Geovisual Analytics Approaches for the Integration of Geography and Social Network Contexts at VisWeek 2012. (\$404.10)
4. **E. Willard Miller Award in Geography, PhD Level: 1st Place.** 2012. Received for the title "Geo-Social Visual Analytics". (\$600)
3. **Academic Enrichment Award** from the **Ruby S. Miller Endowment Fund.** 2011. Received for the title: Spatial-Social Network Visualization for Exploratory Data Analysis at the 19th Annual ACM SIGSPATIAL Conference. (\$174)
2. **GIScience Best Paper Award: Finalist, Extended Abstract Category.** 2010. One of four extended abstracts (of 98) nominated for best in category. Nominated along with KS Ross, BG Finch, **W Luo**, and AM MacEachren for the title "A user-centered approach for designing and developing spatiotemporal crime analysis tools" at GIScience 2010.
1. **University Scholarship.** 2004-2006. Northwest University

GRANTS

4. **VisWeek Travel Grant** 2012. Received for the title: Geovisual Analytics Approaches for the Integration of Geography and Social Network Contexts at VisWeek 2012. (\$1,517)
3. **NSF Travel Grant** 2012. Received for the title: GeoSocialApp: A Visual Exploratory Data Analysis Tool for Spatial-Social Network at CyberGIS'12. (\$800)
2. **NSF Travel Grant.** 2011. Received for the title: Spatial-Social Network Visualization for Exploratory Data Analysis at the 19th Annual ACM SIGSPATIAL Conference. (\$882.93)
1. **University Travel Grant.** 2009. Received for the title: A Two-layer Scale-free Network for the Spread of Infectious Diseases at the 105th Annual Meeting of the Association of American Geographers. (\$250)

ACADEMIC SEARVICE

Reviewing

- *Journal of Information Science and Engineering*
- *Cartography and Geographic Information Science*
- *Geographical Information Systems: Trends and Technologies*
- *International Journal of Health Geographics*
- *Annals of GIS*
- *Journal of Spatial Information Science*

External Service

2011- Education Committee: The International Association of Chinese Professionals in Geographical Information Sciences (CPGIS)

Internal Service

2014 Global Program Orientation Leader
2012- President: Innovation Interdisciplinary Collaboration Community
2012 No)Boundaries Interdisciplinary Student Conference Committee
2011- Department Representative: EMS Graduate Student Council
2011- PSU Department of Geography Graduate School Mentor Program
2010-2011 Treasurer: Network Science Reading Group

Academic Memberships

2008- **AAG** (Association of American Geographers)
2008- **CPGIS** (The International Association of Chinese Professionals in Geographical Information Sciences)
2011- **ICA** (Commission on Cognitive Visualization)

COMPUTING SKILLS

- Programming Language: Java, JavaScript, HTML, CSS, Python, C++, Visual Basic
- Statistical Analysis: Matlab, R, SPSS
- GIS/RS Software: ArcGIS, MapInfo, ENVI, Erdas
- Database: PostgreSQL, Visual FoxPro, Microsoft Access
- Libraries: CartoDB, D3, Processing, Gephi, GeoViz, Weka, JUNG, JFreeChart