

# WEI YANG, Ph.D.

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## EDUCATION

- 2015 Ph.D. in Geography  
Department of Geography, The University of Georgia, USA  
Dissertation: “GIS analysis of depression using location-based social media data”
- 2011 M.S. in Geographic Information Systems  
Department of Geology and Geography, Eastern Michigan University, USA
- 2009 B.S. in Software Engineering  
International School of Software, Wuhan University, China

## PROFESSIONAL APPOINTMENTS

- 2015 - Present Lecturer in Spatial Sciences  
Spatial Sciences Institute, University of Southern California, USA

## PUBLICATIONS

- Yang, W.** and L. Mu. (2015). GIS analysis of depression among Twitter users. *Applied Geography*, 60, 217-223.
- Yang, W.**, L. Mu, and Y. Shen. (2015). Effect of climate and seasonality on depressed mood among Twitter users. *Applied Geography*, 63, 184-191.
- Yang, W.**, L. Mu, and Y. Shen. (2015). How we can use Twitter data to better understand weather-related depression. *The London School of Economics and Political*. Retrieved from: <http://bit.ly/1Z6OyKH>
- Yang, W.**, L. Mu and Y. Shen (under review). Temporal analysis of depression among Twitter users.
- Yang, W.** and L. Mu (in preparation). An optimized geo-visualization method for scattered geographic phenomena.

## **FUNDED RESEARCH AND TEACHING**

- 2017 Integrating GIS analysis to study the impact of gangland residence on birth outcome Disparities. Undergraduate Research Associates Program. University of Southern California. \$4800. PI.
- 2016 - Teaching Web GIS. Amazon Web Services (AWS) Educate Grant.

## **AWARDS**

- 2013-2015 University of Georgia Doctoral Student Travel Grants
- 2011-2015 University of Georgia Teaching Assistantship
- 2009-2011 Eastern Michigan University Research Assistantship

## **INVITED TALKS**

- 2017 Yang, W. Web GIS, technologies, and applications  
University of Northern Colorado, Greeley, CO. Mar. 2, 2017.
- 2016 Yang, W. GIS and big data for health geography.  
University of Delaware, Newark, DE. Dec. 8, 2016.
- 2016 Yang, W. GIS analysis of depression among Twitter users.  
University of Colorado Colorado Springs, Colorado Springs, CO. May 2, 2016.
- 2016 Yang, W. GIS and big data for health geography.  
Kutztown University of Pennsylvania, Kutztown, PA. March 17, 2016.
- 2016 Yang, W. GIS analysis of depression among Twitter users.  
Department of Geography, University of Tennessee, Knoxville, TN. Feb. 11, 2016
- 2016 Yang, W. Enhanced GIS with big data to build smart cities.  
City and Regional Planning, Ohio State University, Columbus, OH. Feb.4, 2016.
- 2016 Yang, W. GIS analysis of depression among Twitter users.  
Department of Geography, Michigan State University, Lansing, MI. Feb.2, 2016.
- 2015 Yang, W. GIS analysis of geographically distributed health issues using  
location-based social media data.  
Washington College, Chestertown, MD. March 3, 2015.
- 2015 Yang, W. GIS analysis of depression among Twitter users.  
Ball State University, Muncie, IN. February 13, 2015.

## **CONFERENCE PARTICIPATION**

### **Oral Presentations**

- 2017 Yang, W. An optimized geo-visualization method for scattered geographic phenomena.  
AAG Annual Meeting, Boston, MA. April 5-9, 2017.

- 2016 Yang, W. Temporal analysis of depression among Twitter users. APCG Annual Conference, Portland, OR. October 5-8, 2016.
- 2016 Yang, W. Effect of climate and seasonality on depressed mood on Twitter. International Geography and Urban Health Symposium, San Francisco, CA. April 1-2, 2016.
- 2016 Yang, W. Effect of climate and seasonality on depressed mood on Twitter. AAG Annual Meeting, San Francisco, CA. March 29-April 2, 2016.
- 2015 Yang, W. Effect of climate and seasonality on depressed mood on Twitter. APCG Annual Conference, Palm Springs, CA. October 21-24, 2015.
- 2015 Yang, W. GIS analysis of depression among Twitter users. AAG Annual Meeting, Chicago, IL. April 21-25, 2015.
- 2015 Yang, W. Effect of climate and seasonality on depressed mood on Twitter. International Conference on Location-Based Social Media Data, Athens, GA. March 13-14, 2015.
- 2014 Yang, W. GIS analysis of depression among Twitter users. SEDAAG Annual Meeting, Athens, GA. November 24-25, 2014.
- 2014 Yang, W. GIS analysis of depression among Twitter users. Applied Geography Conference, Atlanta, GA. October 15-17, 2014.
- 2013 Yang, W. Impact from extreme heat during second trimester and maternal factors on low birth weight in Georgia. SEDAAG Annual Meeting, Roanoke, VA. November 24-26, 2013.
- 2012 Yang, W. Association between socioeconomic environment status and provision of bystander cardiopulmonary resuscitation in Columbus, Ohio. CDC/ATSDR GIS Day, Atlanta, GA. November 14, 2013.

### **Posters**

- 2015 Yang, W. GIS analysis of depression among Twitter users. Big Data Challenges in Life Sciences, Georgia, GA. October 12, 2015.

### **CAMPUS TALKS**

- 2016 Yang, W. GIS analysis of depression among Twitter users. Brown Bag Seminars, Spatial Sciences Institute, University of Southern California. April 8, 2016.

### **TEACHING EXPERIENCE**

#### **University of Southern California, Spatial Sciences Institute**

SSCI 586: GIS Programming and Customization

**Course Leader: design and teach** (Fall 2015 – Spring 2017)

- Introduce students to general software engineering concepts and good programming methods and practices

- Teach students to use Python programming and its open source geospatial libraries to expand upon existing GIS software functionality
- Teach students to use ArcPy and its modules for geospatial analysis In Esri ArcGIS Desktop environment
- Educate students on the conceptualize, plan, implement, and write up the results of an original GIS programming application, customization, automation, and extension

**Teaching Outcomes:** Two of my students' final project posters have been accepted by the 7<sup>th</sup> Annual Los Angeles Geospatial Summit.

#### SSCI 580: Spatial Computing

**Course Leader:** design and teach (Spring 2016 – Fall 2016)

- Introduce student on how big data and spatial computing fit into the present and future evolution of GIS, how it challenges the current GIS design, and how it differs from the existing GIS technologies
- Teach student to apply relevant spatial data mining methods, algorithms, and tools to intelligently solve data-intensive, large-scale, and location-based problems
- Teach student to empower high-performance computing skills by exploiting GIS tools for hadoop and external Python geospatial libraries for geospatial scientific discoveries
- Educate student on building and using different services that combine geographic data, applications, software, or platforms as open source solutions for spatial issues

#### SSCI 582: Spatial Database

**Course Instructor:** design and teach (Fall 2015 – Summer 2017)

- Introduce student to the strengths and limitations of various databases and non-relational structures for spatial data, including those supported by Esri's ArcGIS platform and open source systems
- Teach students on SQL fragments and/or statements as appropriate to interrogate spatial databases to accomplish data loading, maintenance, map production, and analysis
- Teach students to define a geographical realm of interest, model that realm diagrammatically and narratively, and implement the model in a geodatabase

#### SSCI 591: Web GIS

**Course Instructor** (Summer 2016, Summer 2017)

- Teach students to use different web scripting languages commonly used in Web GIS application development, and extend open source and proprietary GIS software functionality
- Teach students to develop and implement innovative Web GIS projects, geospatial web services, mashups, Volunteered Geographic Information (VGI) and Public Participation GIS (PPGIS) applications
- Teach students to solve application development challenges, such as debugging scripts and integrating disparate code modules together into single applications

- Educate students on evaluating the benefits and challenges of developing Web GIS applications using different software technologies and system architectures, including local infrastructure versus cloud-based computing

#### SSCI 581: Concepts for Spatial Thinking

Course Instructor (Spring 2016)

- Introduce students to geographic knowledge, maps, and the spatial representation of data
- Encourage students to critically analyze geographical issues associated with the physical, environmental, and social world
- Teach students the concepts and tools associated with geographic information science

#### SSCI 265: The Water Planet

Lab Instructor (Spring 2017)

- Introduce students to the physical, environmental, and social aspects of the world's water supply
- Educate students on the spatial and temporal character of environmental processes

#### **The University of Georgia, Department of Geography**

Teaching Assistant (Fall 2011 – Spring 2015)

- Introduction to Geographic Information Science
- Advanced Geographic Information Science
- GIS programming in Python
- Cartography and Graphics

#### **Eastern Michigan University, Department of Geography**

Teaching Assistant (Fall 2009 – Spring 2011)

- Geodatabase and Web Mapping
- Spatial Statistics

#### **RESEARCH EXPERINCE**

An advanced text mining techniques – nonnegative matrix factorization, is coupled with geospatial methods and statistical methods to detect depressive Twitter users in the U.S. with more than 600 million tweets. We detect spatiotemporal patterns of depression at county level and at metropolitan statistical areas (MSA) level. We then use socioeconomic risk factors and local climate risk factors to explain the patterns. We also compared tweet-posting rates between normal group and depression group for holiday/non-holiday, weekday/weekend, daytime/nighttime.

My current research is focused on an optimized geo-visualization method to visualize scattered geographic phenomena in large areas. At the same time, I am collaborating with professors from USC Population Research Center (SCPRC) and researchers from Center for Economic and Social Research (CESR). We aim to assess the potentially unique impact of gangland residence in the city of Los Angeles on a barometer of population health – adverse birth

outcomes – using unique combinations of data and meaningful neighborhood boundaries.

## **SERVICE TO PROFESSION**

### **Conference Organization**

Chair, Paper Session, “Cartographic Design and Information Visualization”, AAG Annual Meeting 2017.

Chair, Paper Session, “GIS for Health and the Environment using Social Media and Crowdsourcing Data”, AAG Annual Meeting 2016.

Organizer, International Conference on Location-Based Social Media Data 2015.

### **Peer-Reviewed Journal Reviewer**

Journal of Applied Geography (2016 – present): 4

International Journal of Geographical Information Science (2016 – present): 5

Transactions in GIS (2015 – present): 6

Geographical Analysis (2016 – present): 1

Southeastern Geographer (2016 – present): 1

### **Peer-Reviewed Conference Reviewer**

XXIII ISPRS Congress (2016): 5

## **UNIVERSITY SERVICE**

**Faculty Jury Member**, University of Southern California (2016 – present)

Assess student progress, and assign advisors and committees for graduate students in Geographic Information Science and Technology M.S. Program.

**Committee Member**, University of Southern California (2015 – present)

Supervise graduate students in M.S. in Geographic Information Science and Technology program, College of Letters, Arts, & Sciences. (5 graduate-level students per year)

## **LANGUAGES**

English (fluent), Chinese (native)

## **PROFESSIONAL MEMBERSHIPS**

Associate of American Geographers (2013 – present)

Associate of Pacific Coast Geographers (2015 – present)

Southeastern Division of the Association of American Geographers (2013 – 2015)

International Association of Chinese Professionals in Geographic Information Science (2014 – present)

## REFERENCES

John P. Wilson  
Professor and Director  
Spatial Sciences Institute  
USC Dana and David Dornsife College of Letters, Arts and Sciences  
University of Southern California  
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