

Curriculum Vitae

Liping Yang BSc MSc PhD

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Academic Positions

Fall 2016 – present:

Postdoctoral Researcher
GeoVISTA Center, Department of Geography and Institute for CyberScience
Pennsylvania State University

June 2017 – July 2017:

Visiting Scholar
CISL (Computational Information Systems Laboratory), Mesa Lab
NCAR (National Center for Atmospheric Research)

Fall 2015 – Summer 2016:

Postdoctoral Research Assistant
School of Computing and Information Science
University of Maine

Education

2010 – 2015 University of Maine, USA
2006 – 2009 Fujian Normal University, China
2002 – 2006 Yunnan Normal University, China

Qualifications

2015	PhD	University of Maine, USA	Spatial Information Science and Engineering
2009	MSc	Fujian Normal University, China	Cartography and GIS
2006	BSc	Yunnan Normal University, China	GIS

Research Interests

GIScience; big (geospatial) data; geovisualization; visual analytics; machine and deep learning; computational algorithms; image analysis

Publications and Presentations

Refereed research papers

1. **Yang, L.**, MacEachren, A. M., Mitra, P., and Onorati, T. Visually-enabled active deep learning for (geo) text and image classification: a review. *ISPRS International Journal of Geo-Information*, 7(2), 65, 2018.
2. **Yang, L.** and Worboys, M. Generation of navigation graphs for indoor space. *International Journal of Geographical Information Science*, 29(10): 1737-1756, 2015.
3. **Yang, L.** and Worboys, M. A navigation ontology for outdoor-indoor space. *Third ACM SIGSPATIAL International Workshop on Indoor Spatial Awareness (ISA 2011)*, November, Chicago, IL. 2011.
4. Ma, J., Lin, G., Chen, J. and **Yang, L.** An improved topographic wetness index considering topographic position. *Geoinformatics, 18th International Conference*. IEEE, 2010.
5. Lin, L., Lin, G., Yan, X., **Yang, L.**, Yang, Z. and Chen, A. Surface modeling of human population on subdistrict scale using SPOT5 image and census data: A case study of Xiamen, PR China. *Geoinformatics, 18th International Conference*. IEEE, 2010.
6. **Yang, L.**, Lin, G., Chen, A., Chen, Y., and Wen, X. A spatio-temporal data model for administrative division place names: A case study of Xiamen. *Proceedings of the 6th International Symposium on Digital Earth (ISDE6): Digital Earth in Action*, Organized by International Society for Digital Earth (ISDE) and Chinese Academy of Sciences(CAS), Beijing, P. R. China, September 9-12, 2009.
7. **Yang, L.**, Lin, G. and Chen, Y. Color processing methods of different seasonal SPOT5 images before mosaic. *Remote Sensing Technology and Application*, 24(2): 140-145, 2009. (in Chinese)
8. You, L., Lin, G., Yang, C., Lin, Q. and **Yang, L.** The effects of spatial scales on landscape indices – a case study of the landuse pattern of Xiamen island. *Geo-Information Science*, 10(1): 74-79, 2008. (in Chinese)
9. Jiao, Y. and **Yang, L.** Multi-scale research on the fractal beauty of Hani terrace based on remote sensing and geographic information system. *Journal of Mountain Science*, 26(3): 339-346, 2008. (in Chinese)
10. Jiao, Y. and **Yang, L.** The fractal characteristics of Hani terrace in Ailao mountain. *Acta Ecologica Sinica*, 27(11): 4583-4589, 2007. (in Chinese)

Manuscripts under review

1. Yang, N., MacEachren, A. M., and **Yang, L.** TIN-based tag map layout. Submitted to *Information Visualization*. (under review.)
2. Pan, Y., Zhang, X., Cervone, G., and **Yang, L.** Detection of road pavement potholes and cracks based on the unmanned aerial vehicle multispectral imagery. Submitted to the *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. (under review.)

Manuscripts in preparation

(A few papers integrating GIScience, Remote Sensing, Visual Analytics, and Machine and Deep Learning, which have been led by Liping Yang, are on the way.)

Invited talks

1. Introduction to Deep Learning with TensorFlow (with hands-on tutorial: using TensorFlow for image classification on NCAR HPC cluster), invited talk, *NCAR SEA Class and Hands-on Workshop: Spark and TensorFlow*, NCAR (National Center for Atmospheric Research), Boulder, CO. June 2017.
2. What is Deep Learning, invited talk, *the Geospatial Data Science Workshop (GDS 2017)* at Pennsylvania State University, University Park, PA. February 2017.

Papers and posters presented at conferences and seminars (not included above)

1. A unified OI-space navigation model supporting seamless navigation between and within built indoor and outdoor spaces. Doctoral colloquium talk at *the Conference on Spatial Information Theory (COSIT 2013)*, September, Scarborough, UK. 2013.
2. A navigation ontology for outdoor-indoor space. *Poster presentation at the UMaine Graduate Expo*, April 2012, University of Maine.
3. Similarities and differences between outdoor and indoor space from the perspective of navigation. *Poster presentation at the Conference on Spatial Information Theory (COSIT 2011)*, September, Belfast, ME. 2011.
4. A unified informatic framework supporting seamless navigation within built indoor and outdoor spaces. Doctoral colloquium talk at *the Conference on Spatial Information Theory (COSIT 2011)*, September, Belfast, ME. 2011.

Research Grants (externally funded)

June 2017 – July 2017 Experiments with TensorFlow and Apache Spark on Cheyenne and Yellowstone Supercomputers for Image Classification and Segmentation, **Liping Yang (PI)**, Guido Cervone (CoPI), 2017 NCAR/CISL summer research grant.

May 2017 NVIDIA GPU Grant Proposal, **Liping Yang (PI)**, Guido Cervone (CoPI), Alan MacEachren (CoPI), NVIDIA awarded one Titan X Pascal GPU card to support the research for big geospatial data challenges using machine learning and deep learning.

2015 – 2016 Perception of indoor scene layouts by machines and visually impaired users, Kate Beard (PI), **Liping Yang (Postdoctoral Research Assistant)**, NSF grant.

2010 – 2014 Information integration and human interaction for indoor and outdoor spaces, Michale Worboys (PI), **Liping Yang (Graduate Research Assistant)**, NSF grant.

Research Grants (internally funded)

May 2017 – May 2018 Comment Analytics: Leveraging Big Unstructured Data to Understand Spatial and Temporal Variations in Public Response to Government Policy, Alan M. MacEachren (PI), Jennifer Baka (CoPI), Prasenjit Mitra (CoPI), **Liping Yang (Postdoc)**, Internal (Penn State) Institute for CyberScience Seed Grant.

Teaching and Mentoring Experiences

- Spring 2018 -- GEOG 597 Big Data & Place
 - Invited lecture: Tweet analysis about places using machine learning with Python (brief machine learning theory and hands-on tutorials).
- Fall 2017 Co-Instructor GEOG 461W (Dynamic Cartographic Representation) with Prof. Alan M. MacEachren, Department of Geography, Pennsylvania State University, USA.
 - Develop course syllabus together with Prof. MacEachren.
 - Instruct programming for web development and design using HTML, CSS, and JavaScript, including Leaflet.js, D3.js, jQuery, and AJAX etc.
 - Prepare lab instructions and lab quizzes and mentor students on coding for web mapping.
 - Lead selected course discussions and give lecture on user-centered design.
 - Develop extra lab materials and readings for the course on my blog.
 - Advise students' final interactive web map app projects (including instructing students using Git and Bitbucket for version control and collaboration).
- Nov. 2016 – present Mentoring graduate students Assisted Prof. Alan MacEachren and Prof. Guido Cervone in mentoring PhD students associated with the two professors' teams at Penn State.
- Jun. 2011 – Dec. 2012 School of Computing and Information Science, University of Maine, USA. Assisted my PhD advisor Prof. Michael Worboys in his course (Formal Foundations for Information Science).

Theses

Theories and models of indoor space, PhD Thesis, University of Maine, 2015.

Auto-match between text and map based on Chinese word segmentation: A case study of land use policy text, MSc Thesis, Fujian Normal University, 2009.

Design and development of transport information system based on MapObjects: A case of Kunming City, BSc Thesis, Yunnan Normal University, 2006.

Honors and Awards

- 2014 – 2015 Michael J. Eckardt Dissertation Fellowship in MEIF (Maine Economic Improvement Fund) Areas, University of Maine, USA
- 2010 – 2014 Graduate Research Assistantship, University of Maine, USA
- 2011 ACM SIGSPATIAL GIS 2011 NSF Student Travel Grants, USA
- 2010 ACM SIGSPATIAL GIS 2010 NSF Student Travel Grants, USA
- 2005 Yunnan Province Government Scholarship (Top level), China
- 2004 National Scholarship (Top level), China

Professional Service/Associations

Reviewer (Journals)

International Journal of Geographical Information Science (IJGIS)

Internal service

Reviewer, Seed Grant Proposal sponsored by Institute for CyberScience (ICS), Spring 2017, Pennsylvania State University.

Judge, EMS graduate poster competition, Spring 2017, Pennsylvania State University.

Membership of professional societies

- 2016 – present Member of International Association of Chinese Professionals in Geographical Information Sciences (CPGIS)
- 2016 – 2017 Education Committee member of CPGIS
- 2016 – present Member of Association of American Geographers (AAG)

Computer Skills

- **GIS:** ArcGIS, ArcObjects, ArcGIS Engine, QGIS (formerly Quantum GIS); ERDAS Imagine, PCI, IDRISI, and MicroStation.
- **Programming languages:** C/C++, Java, Python, Scala, JavaScript, C#, Visual Basic.NET, Octave, Prolog, and NetLogo.
- **Database:** ESRI Geodatabase, Microsoft SQL Server, MySQL, MongoDB, SQLite, PostgreSQL, and PostGIS.
- **Document and web markup languages:** LaTeX, XML, and HTML.

- **3D modeling:** Unity3D and Blender.
- **Statistics:** R, SPSS, and S-PLUS.
- **Image and point cloud processing:** Processing, OpenCV (Open Source Computer Vision), PCL (Point Cloud Library), OpenNI, and Kinect.
- **Machine learning and deep learning:** TensorFlow, Keras, Scikit-learn, Gensim, and NLTK (Natural Language Toolkit).
- **High performance computing, parallel computing, and big data:** Apache Hadoop, Apache Spark, OpenMP, MPI (Message Passing Interface).
- **Geoparsing:** GeoTxt, GeoPy, GeoNames, and Google Cloud Natural Language API.
- **Web development:** Django web framework, Node.js, CSS, JavaScript, jQuery, AJAX, Bootstrap (front-end framework), D3.js, DC.js, Crossfilter, Leaflet.js, Turf.js, JSON, GeoJSON, TopoJSON, Mapbox, and OSM (OpenStreetMap).
- **Version control tools:** Git, GitHub, and Bitbucket.
- **Platforms:** Linux (Ubuntu, CentOS, and Red Hat), Windows, and Mac OS X.
- **General:** Microsoft Office Suite (Word, Excel, PowerPoint, Access, Visio), Apache OpenOffice, and LibreOffice.
- **Others:** Protégé, Adobe Photoshop, and tmux.

References

Prof. Michael Worboys (PhD Advisor)
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 Old Royal Naval College, Park Row, London SE10 9LS
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