

# Yao–Yi Chiang, Ph.D.

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## CURRENT APPOINTMENTS

University of Southern California  
2017 – Associate Professor (Research) of Spatial Sciences, Spatial Sciences Institute

## EDUCATION

2007 – 2010 Ph.D., Computer Science, University of Southern California, USA  
Dissertation Title: *Harvesting Geographic Features from Heterogeneous Raster Maps*  
2003 – 2004 M.S., Computer Science, University of Southern California, USA  
1996 – 2000 B.B.A. in Information Management, National Taiwan University, Taiwan

## PROFESSIONAL EXPERIENCE

### AirMap, Santa Monica, CA, USA

2015 – Chief Scientist

### University of Southern California, Los Angeles, CA, USA

2013 – 2017 Assistant Professor (Research) of Spatial Sciences, Spatial Sciences Institute  
2011 – 2013 Lecturer, Spatial Sciences Institute  
2010 – 2013 Postdoctoral Fellow, Information Sciences Institute  
2007 – 2010 Graduate Research Assistant, Information Sciences Institute  
2005 – 2006 Research Programmer, Information Sciences Institute  
2004 – 2005 Graduate Research Assistant, Information Sciences Institute

### InferLink Corporation, El Segundo, CA, USA

2013 – 2014 Research Scientist

Geosemble Technologies, El Segundo, CA, USA

2006 – 2007 Senior Software Engineer

Fetch Technologies, El Segundo, CA, USA

2006 – 2007 Senior Software Engineer

TLJ Intertech, Taipei, Taiwan

2002 – 2003 Software Engineer

**Honors & Awards**

Professional

- 2017 Travel Award, the U.S. National Committee (USNC) for the International Cartographic Association (USNC-ICA)
- 2015 Best Vision Paper, First Place, the 2015 ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Seattle, Washington, USA (award sponsored by the Computing Research Association's Computing Community Consortium under the CCC Blue Sky initiative)
- 2015 Travel Award, the U.S. National Committee (USNC) for the International Cartographic Association (USNC-ICA)
- 2013 Travel Award, the U.S. National Committee (USNC) for the International Cartographic Association (USNC-ICA)

Graduate

- 2009 Best Paper Award, Second Place, the Fourth Annual Intelligent Systems Division Graduate Student Symposium, USC Information Sciences Institute, Marina del Rey, CA, USA
- 2008 Best Paper Award, Second Place, the Third Annual Intelligent Systems Division Graduate Student Symposium, USC Information Sciences Institute, Marina del Rey, CA, USA
- 2007 – 2010 The Viterbi School Doctoral Fellowship, University of Southern California, Los Angeles, CA, USA

**Patent**

- 2010 System and Method for Fusing Geospatial Data, Chen, C.-C., Knoblock, C. A., Shahabi, C., and **Chiang, Y.-Y.** US Patent No. 7660441.

**Publications**

Book Chapters

- 2017

- Chiang, Y.-Y.** (2017). Unlocking Textual Content from Historical Maps – Potentials & Applications, Trends, and Outlooks. In S. K.C., H. Mallikarjun, B. Vitoantonio, and N. Atul (eds.), *Recent Trends in Image Processing and Pattern Recognition. Communications in Computer and Information Science, volume 709* (pp. 111–124). Singapore: Springer.
- 2016
- Park, W., **Chiang, Y.-Y.**, Lee, S. J., and Yu, K. (2016) Hot Spots of Tweets Related to Food, Entertainment, Work, and Study in Gangnam Area of Seoul, Korea. In *Esri Map Book, volume 31: GIS – Enabling a Smarter World*. Redlands, CA, USA: Esri.
- 2013
- Chiang, Y.-Y.**, Leyk, S., and Knoblock, C. A. (2013). Efficient and Robust Graphics Recognition from Historical Maps. In Y.-B. Kwon and J.-M. Ogier (eds.), *Graphics Recognition. New Trends and Challenges. Lecture Notes in Computer Science, volume 7423* (pp. 25–35). Berlin, Germany: Springer.
- 2012
- Chiang, Y.-Y.** and Knoblock, C. A. (2012). Generating Named Road Vector Data from Raster Map. In M. Kwan, M. Goodchild, and S. Shekhar (eds.), *Geographic Information Science. GIScience 2012. Lecture Notes in Computer Science, volume 7478* (pp. 57–71). Berlin, Germany: Springer.
- 2010
- Chiang, Y.-Y.** and Knoblock, C. A. (2009). Extracting Road Vector Data from Raster Maps. In J.-M. Ogier, W. Liu, and J. Lladós (eds.), *Graphics Recognition: Achievements, Challenges, and Evolution. GREC 2009. Lecture Notes in Computer Science, volume 6020* (pp. 93–105). Berlin, Germany: Springer.

#### Refereed Journal Articles

- 2016
- Chiang, Y.-Y.**, Leyk, S., Honarvar Nazari, N., Moghaddam, S., and Tan, T. X. (2016) Assessing Impact of Graphical Quality on Automatic Text Recognition in Digital Maps. *Computers & Geosciences*, 93:21–35. doi: 10.1016/j.cageo.2016.04.013
- 2015
- Wu, W., Meng, W., Su, W., Zhou, G., and **Chiang, Y.-Y.** (2015) Q2P: Discovering Query Templates via Autocompletion. *ACM Transactions on the Web*, 10(2):1–29. doi: 10.1145/2873061
- 2014
- Chiang, Y.-Y.** and Knoblock, C. A. (2014) Recognizing Text in Raster Maps. *Geoinformatica*, 19(1):1–27. doi: 10.1007/s10707-014-0203-9
- Chiang, Y.-Y.**, Leyk, S., and Knoblock, C. A. (2014). A Survey of Digital Map Processing Techniques. *ACM Computing Surveys*, 47(1):1–44. doi: 10.1145/2557423
- 2013

**Chiang, Y.-Y.** and Knoblock, C. A. (2013). A General Approach for Extracting Road Vector Data from Raster Maps. *International Journal of Document Analysis and Recognition*, 16(1):55–81. doi:10.1007/s10032-011-0177-1

2009

**Chiang, Y.-Y.**, Knoblock, C. A., Shahabi, C., and Chen, C.-C. (2009). Automatic and Accurate Extraction of Road Intersections from Raster Maps. *Geoinformatica*, 13(2):121– 157. doi:10.1007/s10707-008-0046-3

### Refereed Conference & Symposium Proceedings<sup>1</sup>

2017

**Chiang, Y.-Y.**, Jain, A., Bandyopadhyay, B., Knoblock, A. C. (2017). Automatic Learning of User Design Rationales from Examples. In *Proceedings of the Symposium on Solid and Physical Modeling (SPM)*, Berkeley, CA, USA (poster; to appear).

Nanetti, A., Cattaneo, A., Cheong, S.-A., **Chiang, Y.-Y.**, and Lin, C.-Y. (2017). Visual Knowledge Aggregation: From Static to Dynamic Information Systems in Library Contexts. In *Proceedings of the ICA Pre-Conference Workshop on Mapping Tools for Non-Mapping Experts: Incorporating Geospatial Visualization Tools in Libraries*, Washington, D.C., USA (to appear).

Leyk, S. and **Chiang, Y.-Y.** (2017). Implementing the Concept of Geographic Context for Efficient Recognition from Large-Scale Topographic Map Series. In *Proceedings of the 28th International Cartographic Conference*, Washington, D.C., USA (to appear).

**Chiang, Y.-Y.** (2017). Linking Historical Maps to the USC Shoah Foundation Visual History Archive. In *Proceedings of the 28th International Cartographic Conference*, Washington, D.C., USA (to appear).

2016

Duan, W. and **Chiang, Y.-Y.** (2016). Building Knowledge Graph from Public Data for Predictive Analysis - A Case Study on Predicting Technology Future in Space and Time. In *Proceedings of the 5th ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data*, pp. 7–13, San Francisco, CA, USA.

Yu, R., Luo, Z., and **Chiang, Y.-Y.** (2016). Recognizing Text on Historical Maps Using Maps from Multiple Time Periods. In *Proceedings of the 23rd International Conference on Pattern Recognition*, IEEE, pp. 3993–3998, Cancun, Mexico.

**Chiang, Y.-Y.** (2016). Exploiting Context in Cartographic Evolutionary Documents to Extract and Build Linked Spatial-Temporal Datasets. In *Proceedings of the 2016*

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<sup>1</sup> The computer science community traditionally considers scientific conferences as the primary venue for research dissemination and publication. In the computing community, top-tier conferences require a full-length paper submission, and the submissions are peer-reviewed by multiple reviewers. For example, the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems has an acceptance rate around 20% over the years. More information can be found on <http://cra.org/resources/best-practice-memos/evaluating-computer-scientists-and-engineers-for-promotion-and-tenure/> (Patterson, D., Snyder, L., Ullman, J. (1999). *Evaluating Computer Scientists and Engineers for Promotion and Tenure*. Best Practices Memo. Computing Research News, Computing Research Association.)

*Conference on Complex Systems*, Complex Systems Society, Amsterdam, Netherlands (invited abstract & speech).

Leyk, S. and **Chiang, Y.-Y.** (2016). Information Extraction Based on the Concept of Geographic Context. In *Proceedings of the 2016 AutoCarto*, pp. 100–110, Albuquerque, NM, USA.

Honarvar Nazari, N., Tan, T. X., **Chiang, Y.-Y.** (2016) Integrating Text Recognition for Overlapping Text Detection in Maps. In *Proceedings of the Electronic Imaging, Document Recognition and Retrieval XXIII conference*, Society for Imaging Science and Technology, pp. 1–8(8), San Francisco, CA, USA.

Zhang, Y., **Chiang, Y.-Y.**, Knoblock, C. A., Li, C., Du, L., Liu, S., and Singh, S. (2016) An Automatic Approach for Building Place-Name Datasets from the Web. In *Proceedings of the 19th AGILE International Conference on Geographic Information Science*, Helsinki, Finland.

2015

**Chiang, Y.-Y.** (2015) Querying Historical Maps as a Unified, Structured, and Linked Spatiotemporal Source (Vision Paper). In *Proceedings of the 23rd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, 16:1–16:4, Seattle, WA, USA (**best vision paper award**).

**Chiang, Y.-Y.**, Leyk, S., Honarvar Nazari, N., and Moghaddam, S. (2015) The Impact of Graphical Quality on Automatic Text Recognition in Digital Maps. In *Proceedings of the 27th International Cartographic Conference* (ISBN 978-85-88783-11-9), Rio de Janeiro, Brazil.

**Chiang, Y.-Y.** and Leyk, S. (2015) Exploiting Online Gazetteer for Fully Automatic Extraction of Cartographic Symbols. In *Proceedings of the 27th International Cartographic Conference* (ISBN 978-85-88783-11-9), Rio de Janeiro, Brazil.

**Chiang, Y.-Y.** and Gehring, S. (2015) Semi-Automated Visualization of Spatial Context in Unstructured Text. In *Proceedings of the 27th International Cartographic Conference* (ISBN 978-85-88783-11-9), Rio de Janeiro, Brazil.

Ngo, V., Swift, J., and **Chiang, Y.-Y.** (2015) Visualizing Land Reclamation in Hong Kong: A Web Application. In *Proceedings of the 27th International Cartographic Conference* (ISBN 978-85-88783-11-9), Rio de Janeiro, Brazil.

Fernandes, R. and **Chiang, Y.-Y.** (2015) Creating an Intuitive and Effective User Interface for Map Processing in a Geographic Information System. In *Proceedings of the 27th International Cartographic Conference* (ISBN 978-85-88783-11-9), Rio de Janeiro, Brazil.

2014

Narayanan, A., Jaiswal, A., **Chiang, Y.-Y.**, Geng, Y., Knoblock, C. A., and Szekely, P. (2014) Integration and Automation of Data Preparation and Data Mining. In *Proceedings of the 2015 IEEE International Conference on Data Mining Workshop (ICDMW)*, pp. 1076–1085, Shenzhen, China.

Sathe, M., Knoblock, C. A., **Chiang, Y.-Y.**, and Harris, A. (2014) A Parallel Query Engine for Interactive Spatiotemporal Analysis. In *Proceedings of the 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 429–432, Dallas, TX, USA.

**Chiang, Y.-Y.**, Moghaddam, S., Gupta, S., Fernandes, R., and Knoblock, C. A. (2014) From Map Images to Geographic Names. In *Proceedings of the 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 581–584, Dallas, TX, USA.

**Chiang, Y.-Y.**, Wu, B., Anand, A., Akade, K., and Knoblock, C. A. (2014) A System for Efficient Cleaning and Transformation of Geospatial Data Attributes. In *Proceedings of the 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 577–580, Dallas, TX, USA.

**Chiang, Y.-Y.**, Chioh, P., and Moghaddam, S. (2014) A Training-by-Example Approach for Symbol Spotting from Raster Maps. In *Proceedings of the 8th International Conference on Geographic Information Science (GIScience)*, pp. 264–269, Vienna, Austria.

Jaiswal, A., **Chiang, Y.-Y.**, Knoblock, C. A., and Lan, L. (2014) Location Prediction with Sparse GPS Data. In *Proceedings of the 8th International Conference on Geographic Information Science (GIScience)*, pp. 315–319, Vienna, Austria.

2013

**Chiang, Y.-Y.** (2013) Strabo: A Complete System for Label Recognition in Maps. In *Proceedings of the 26th International Cartographic Conference* (ISBN: 978-1-907075-06-3), Dresden, Germany.

Zhang, Y., **Chiang, Y.-Y.**, Szekely, P., and Knoblock, C. A. (2013) A Semantic Approach to Retrieving, Linking, and Integrating Heterogeneous Geospatial Data. In *Proceedings of the Workshop on Semantic Cities. International Joint Conference on Artificial Intelligence (IJCAI-13)*, ACM, pp. 31–37, Beijing, China.

2011

**Chiang, Y.-Y.** and Knoblock, C. A. (2011). Recognition of Multi-Oriented, Multi-Sized, and Curved Text. In *Proceedings of the 11th International Conference on Document Analysis and Recognition*, IEEE, pp. 1399–1403, Beijing, China.

**Chiang, Y.-Y.**, Leyk, S., and Knoblock, C. A. (2009). Integrating Color Image Segmentation and User Labeling for Efficient and Robust Graphics Recognition from Historical Maps. In *Proceedings of the 9th IAPR International Workshop on Graphics Recognition (GREC)*, Beijing, China.

2010

**Chiang, Y.-Y.** and Knoblock, C. A. (2010). Strabo: A System for Extracting Road Vector Data from Raster Maps (demo paper). In *Proceedings of the 18th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 544–545, San Jose, CA, USA.

**Chiang, Y.-Y.** and Knoblock, C. A. (2010). An Approach for Recognizing Text Labels in Raster Maps. In *Proceedings of the 20th International Conference on Pattern Recognition*, IEEE, pp. 3199–3202, Istanbul, Turkey.

Knoblock, C. A., Chen, C.-C., **Chiang, Y.-Y.**, Goel, A., Michelson, M., and Shahabi, C. (2010). A General Approach to Discovering, Registering, and Extracting Features from Raster Maps. In *Proceedings of the Conference on Document Recognition and Retrieval XVII of SPIE-IS&T Electronic Imaging*, SPIE, volume 7534, San Francisco, CA, USA.

2009

- Chiang, Y.-Y.** and Knoblock, C. A. (2009). Classification of Raster Maps for Automatic Feature Extraction. In *Proceedings of the 17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 138–147, Seattle, WA, USA.
- Chiang, Y.-Y.** and Knoblock, C. A. (2009). A Method for Automatically Extracting Road Layers from Raster Maps. In *Proceedings of the Tenth International Conference on Document Analysis and Recognition*, IEEE, pp. 838–842, Barcelona, Spain.
- Chiang, Y.-Y.** and Knoblock, C. A. (2009). Automatic Road Vectorization of Raster Maps. In *Proceedings of the 8th IAPR International Workshop on Graphics Recognition (GREC)*, pp. 27–28, La Rochelle, France.

2008

- Chiang, Y.-Y.** and Knoblock, C. A. (2008). Automatic Extraction of Road Intersection Position, Connectivity, and Orientations from Raster Maps. In *Proceedings of the 16th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 1–10, Irvine, CA, USA.

2006

- Chiang, Y.-Y.** and Knoblock, C. A. (2006). Classification of Line and Character Pixels on Raster Maps using Discrete Cosine Transformation Coefficients and Support Vector Machine. In *Proceedings of the 18th International Conference on Pattern Recognition*, IEEE, pp. 1034–1037, Hong Kong, China.

- Shahabi, C., **Chiang, Y.-Y.**, Chung, K., Huang, K.-C., Khoshgozaran-Haghighi, J., Knoblock, C. A., Lee, S. C., Neumann, U., Nevatia, R., Rihan, A., Thakkar, S., and You, S. (2006). GeoDec: Enabling Geospatial Decision Making. In *Proceedings of the International Conference on Multimedia & Expo*, IEEE, pp. 93–96, Toronto, Ontario, Canada.

2005

- Chiang, Y.-Y.**, Knoblock, C. A., and Chen, C.-C. (2005). Automatic Extraction of Road Intersections from Raster Maps. In *Proceedings of the 13th ACM International Symposium on Advances in Geographic Information Systems*, pp. 267–276, Bremen, Germany.
- Desai, S., Knoblock, C. A., **Chiang, Y.-Y.**, Desai, K., and Chen, C.-C. (2005). Automatically Identifying and Georeferencing Street Maps on the Web. In *Proceedings of the 2nd International Workshop on Geographic Information Retrieval*, ACM, pp. 35–38, Bremen, Germany.

2004

- Chen, C.-C., Knoblock, C. A., Shahabi, C., **Chiang, Y.-Y.**, and Thakkar, S. (2004). Automatically and Accurately Conflating Orthoimagery and Street Maps. In *Proceedings of the 12th ACM International Symposium on Advances in Geographic Information Systems*, pp. 47–56, Washington, D.C., USA.

## Open Source Software and Datasets

2017

- Karma-CAD: A Semi-Automatic System for Learning User Intent of CAD Models [Computing software]. (2017). Apache License, Version 2.0. Retrieved from <https://github.com/spatial-computing/Karma-CAD>
- Strabo: A Complete System for Text Recognition from Maps [Computer software]. (2017). Apache License, Version 2.0. Retrieved from <https://github.com/spatial-computing/strabo-text-recognition>
- Machine Readable Map Labels [Data sets]. (2017). Open Database License (ODbL) v1.0. Retrieved from <https://github.com/spatial-computing/map-ocr-ground-truth>
- Karma: A Data Integration Tool [Computer software]. (2017). Apache License, Version 2.0. Retrieved from <http://usc-isi-i2.github.io/karma/>

2016

- Generating Place Datasets from the Web [Computer Software]. (2016). Apache License, Version 2.0. Retrieved from <https://github.com/spatial-computing/generating-place-datasets-from-web>

### Manuscripts Submitted or Under Construction

- Werner, M. and **Chiang, Y.-Y.** (eds.) Spatial Computing Series, Springer (proposal in progress).
- Chiang, Y.-Y.** An Overview of Applications, Trends, and Outlooks in Digital Map Processing, *International Journal of Computer Vision and Image Processing* (submitted 3/2017).
- Holmes-Wong, D., **Chiang, Y.-Y.** Unlocking Maps for Discovery and Other Purposes, *DLF 2017 Forum*, Pittsburgh, PA, USA (submitted 3/2017).
- Zhang, J., Shen, T., Wang, W., Jiang, X., Ku, W.-S., Sun, M.-T., and **Chiang, Y.-Y.** A VLOS Compliance Solution to Ground/Aerial Parcel Delivery Problem, *International Symposium on Spatial and Temporal Databases*, Arlington, VA, USA (submitted 3/2017).
- Eckel, S. P., Deng, H., Urman, R., Habre, R., Morrison, J., Gauderman, J., Ambite, J. L., **Chiang, Y.-Y.**, Stripelis, D., and Gilliland, F. D. Methods for Predicting Asthma Exacerbations using Personal Sensor Monitoring systems, *International Society for Environmental Epidemiology (ISEE)*, Sydney, Australia (submitted 3/2017).
- Stripelis, D., **Chiang, Y.-Y.**, Eckel, S. P., Habre, R., Deng, H., Urman, R., J., Gauderman, Gilliland, F. D., and Ambite, J. L. Scaling up Data Integration and Analysis of Sensor Data for Pediatric Asthma, *AMIA (American Medical Informatics Association) Annual Symposium*, Washington, D.C., USA (submitted 3/2017).
- Wu, J., Su, Z., Fu, Z., **Chiang, Y.-Y.**, and Lu, Y. A New Method Using Gabor Filter for Automatic Recognition of Hatched Residential Areas, *Geomatics and Information Science of Wuhan University* (submitted 2/2017).
- Stripelis, D., Ambite, J. L., **Chiang, Y.-Y.**, Eckel, S. P., and Habre, R. A Scalable Data Integration and Analysis Architecture for Sensor Data of Pediatric Asthma, *IEEE International Conference on Data Engineering*, San Diego, CA, USA (submitted 11/2016; accepted 01/2017).
- Chiang, Y.-Y.** Using Historical Maps in Scientific Studies: Challenges and Best Practices, SpringerBrief (proposal submitted & accepted 12/2016).



## **Presentations<sup>2</sup>**

### Conferences & Workshops

- 2017 **Chiang, Y.-Y.**, Querying Historical Maps as a Unified, Structured, and Linked Spatiotemporal Source (Keynote), Second International Workshop on Exploring Old Maps, Universität Würzburg, Germany.
- 2017 **Chiang, Y.-Y.**, Drones and GIS: The Lowdown on Small UAS Opportunities (Panel Moderator), Seventh Annual Los Angeles Geospatial Summit, Los Angeles, CA, USA.
- 2017 **Chiang, Y.-Y.**, Cartographic Research (Panel Discussion), International Map Industry Association (IMIA) Conference, San Diego, CA, USA.
- 2016 **Chiang, Y.-Y.**, Querying Historical Maps as a Unified, Structured, and Linked Spatiotemporal Source, University Consortium for Geographic Information Science 2016 Symposium, Scottsdale, AZ, USA.
- 2014 **Chiang, Y.-Y.** and Knoblock, C. A., Integrating Heterogeneous Sources in a Geospatial Framework to Support Oil Field Operations, CiSoft, University of Southern California, Los Angeles, CA, USA.
- 2011 **Chiang, Y.-Y.**, Harvesting Named Geographic Features from Raster Maps, American Association of Geographers Annual Meeting, Seattle, WA, USA.

### Webinars & Videos

- 2016 **Chiang, Y.-Y.**, Unleashing the Power of Historical Maps (Webinar), United States Geological Survey, St. Louis, MO, USA.
- 2015 **Chiang, Y.-Y.**, Strabo: Digital Map Processing (Webinar). Geographic Information Science and Technology Graduate Programs, University of Southern California, Los Angeles, CA, USA.

### Invited Lectures & Seminars

- 2016 **Chiang, Y.-Y.**, GIS and Spatial Humanity Datasets, Nanyang Technological University, Singapore.
- 2016 **Chiang, Y.-Y.**, Introduction to Geospatial Data Integration, CSCI 548: Information Integration on the Web, University of Southern California, Los Angeles, CA, USA.
- 2016 **Chiang, Y.-Y.**, Introduction to Geographic Information Systems, INF 549: Introduction to Computational Thinking and Data Science, University of Southern California, Los Angeles, CA, USA.
- 2016 **Chiang, Y.-Y.**, Introduction to Geospatial Data Integration, SSCI 582: Spatial Databases, University of Southern California, Los Angeles, CA, USA.
- 2016 **Chiang, Y.-Y.**, Introduction to Spatial Computing Research, GeoDesign Orientation, Spatial Sciences institute, University of Southern California, Los Angeles, CA, USA.

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<sup>2</sup> The presentations with peer-reviewed publications are in the section of Publication: Conference & Symposium Proceedings.

- 2015 **Chiang, Y.-Y.**, Introduction to Spatial Computing Research, GeoDesign Orientation, Spatial Sciences institute, University of Southern California, Los Angeles, CA, USA.
- 2013 **Chiang, Y.-Y.**, Building a Complete System for Text Recognition in Maps, TerraGo, El Segundo, CA, USA.
- 2012 **Chiang, Y.-Y.**, Discovery, Extraction, and Fusion of Geospatial Information in Maps, Information Sciences Institute, Marina del Rey, CA, USA.
- 2011 **Chiang, Y.-Y.**, Harvesting Named Geographic Features from Raster Maps, National Geospatial-Intelligence Agency, Washington, D.C., USA.
- 2011 **Chiang, Y.-Y.**, Harvesting Named Geographic Features from Raster Maps, Chinese Academy of Sciences, Beijing, China.
- 2011 **Chiang, Y.-Y.**, Harvesting Named Geographic Features from Raster Maps, National Taiwan University, Taipei, Taiwan.
- 2011 **Chiang, Y.-Y.**, Strabo: An Automatic Map Processing System, Upjohn Center for the Study of Geographical, Western Michigan University, Kalamazoo, MI, USA.
- 2010 **Chiang, Y.-Y.**, Harvesting Geographic Features from Heterogeneous Raster Maps, Academia Sinica, Taipei, Taiwan.
- 2010 **Chiang, Y.-Y.**, Map Processing, CSCI-548: Information Integration on the Web, University of Southern California, Los Angeles, CA, USA.
- 2009 **Chiang, Y.-Y.**, A General Method to Automatically Extracting Road Layers from Raster Maps, Geosemble Technologies, Los Angeles, CA, USA.
- 2009 **Chiang, Y.-Y.**, Map and Imagery Fusion, CSCI-548: Information Integration on the Web, Department of Computer Science, University of Southern California, Los Angeles, CA, USA.
- 2009 **Chiang, Y.-Y.**, Harvesting Geographic Features from Heterogeneous Raster Maps, University of Lugano, Lugano, Switzerland.
- 2008 **Chiang, Y.-Y.**, Map Search and Extraction, CSCI-548: Information Integration on the Web, Department of Computer Science, University of Southern California, Los Angeles, CA, USA.
- 2007 **Chiang, Y.-Y.**, Automatic and Accurate Extraction of Road Intersections from Raster Maps, National Taiwan University, Taipei, Taiwan.

## Grants & Contracts

- 2017 – 2018 *Unlocking Maps: Automatic and Streamlined Metadata Creation for Digital Collections*  
National Endowment for the Humanities; **Co-PI**; Holmes-Wong, Deborah, Digital Library, University of Southern California; PI; \$74,950 (\$45,483, **Chiang**; total costs)
- 2017 – 2018 *Unlocking Maps: Automatic and Streamlined Metadata Creation for Digital Collections*  
Undergraduate Research Associates Program, University of Southern California; **PI**; \$6,400 (direct costs)
- 2016 – 2019 *PRISMS Data and Software Coordination and Integration Center (DSCIC)*

- National Institutes of Health; **Co-I**; Ambite, J. L., Information Sciences Institute, University of Southern California and Gilliland, F. D., Keck School of Medicine, University of Southern California; PIs; \$5.25 million (\$391,188, **Chiang**; total costs)
- 2016 – 2019 *Exploiting Context in Cartographic Evolutionary Documents to Extract and Build Linked Spatial-temporal Datasets*  
National Science Foundation, IIS; **Co-PI**; Knoblock, C. A., Information Sciences Institute, University of Southern California and Leyk, S., Department of Geography, University of Colorado, Boulder, PIs; \$913,841 (\$349,529, **Chiang**; total costs)
- 2016 – 2017 *Automatic Alignment of Design Semantics to Enable Mapping Between CAD Systems*  
Defense Advanced Research Projects Agency; **Co-PI**; Knoblock, C. A., Information Sciences Institute, University of Southern California, PI; \$120,000 (\$87,803, **Chiang**; total costs)
- 2016 – 2017 *Linking Historical Maps to USC Shoah Foundation Visual History Archive*  
Undergraduate Research Associates Program, University of Southern California; **PI**; \$5,400 (direct costs)
- 2015 – 2016 *Modeling, Integrating, and Search Across Multiple Geographic Features from a Variety of Geospatial Sources*  
BAE Systems; **PI**; \$330,048 (total costs)
- 2015 – 2016 *Linking Historical Maps to USC Shoah Foundation Visual History Archive*  
Undergraduate Research Associates Program, University of Southern California; **PI**; \$3,200 (direct costs)
- 2015 – 2016 *Automatic Map Processing on the Cloud*  
Microsoft Azure Educator Grant; **PI**; \$9,000 (direct costs)
- 2015 – 2016 *Automatic Text Recognition in Historical Ordnance Survey Maps (Phase II)*  
Conveyancing Liability Solutions; **PI**; \$60,000 (direct costs)
- 2014 – 2015 *Automatic Text Recognition in Historical Ordnance Survey Maps (Phase I)*  
Conveyancing Liability Solutions; **PI**; \$60,000 (direct costs)
- 2014 – 2015 *Preserving Historical Geographic Data Through Automatic Maps Processing*  
Undergraduate Research Associates Program, University of Southern California; **PI**; \$3,150 (direct costs)
- 2013 – 2015 *A Unified Approach to Information Integration and Data Mining on Large, Heterogeneous Data Sources*  
Huawei Technologies Co., Ltd.; **Co-I**; Knoblock, C. A., Information Sciences Institute, University of Southern California, PI; \$130,000 (\$77,594, **Chiang**; direct costs)
- 2013 – 2014 *Harvesting Geographic Information from Heterogeneous Raster Maps*  
TerraGo Technologies; **PI**; \$75,000 (direct costs)
- 2013 – 2014 *Integrating Heterogeneous Sources in a Geospatial Framework to Support Oil Field Operations*

CiSoft; **Co-I**; Knoblock, C. A., Information Sciences Institute, University of Southern California, PI; \$116,000 (\$50,194, **Chiang**; direct costs)

## Teaching

### Current Courses Taught

University of Southern California

INF 553: Foundations and Applications of Data Mining (Course Lead)

SSCI 592: Mobile GIS (Course Lead)

SSCI 680: Advanced Spatial Computing (Course Lead)

### Past Courses Taught

University of Southern California

CSCI 599: Geospatial Data Integration

SSCI 582: Spatial Databases

SSCI 586: GIS Programming and Customization

### Post-Doctoral Fellows & Visiting Scholars Directed

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| 2015 – 2016 | Dr. Yuan Gao, Spatial Sciences Institute, University of Southern California (Visiting Scholar; Associate Professor of the Department of Information and Management, Northwest University, China)                               |
| 2015 – 2016 | Dr. Jianhua Wu, Spatial Sciences Institute, University of Southern California (Visiting Scholar; Associate Professor and Dean of the Department of GIS, School of Geography and Environment, Jiangxi Normal University, China) |
| 2014 – 2015 | Dr. Woojin Park, Spatial Sciences Institute, University of Southern California   |
| 2014 – 2015 | Dr. Zebao Zhang, Spatial Sciences Institute, University of Southern California (Visiting Scholar; Lecturer and Researcher at the Harbin Engineering University, China)   |

### Dissertations & Theses Directed

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|------|---|
|      | Weiwei Duan, (Ph.D. Program in Computer Science, University of Southern California)   |
|      | Dimitrios Stripellis, (Ph.D. Program in Computer Science, University of Southern California) (Co-advisor with J. L. Ambite)   |
| 2015 | Nancy McMahon, M.S., Geographic Information Science and Technology, University of Southern California<br>Thesis title: <i>The Role of GIS in Asset Management: County of Kauai Department of Parks and Recreation a Need for an Asset Management Program.</i> |
| 2015 | Patricia Jula, M.S., Geographic Information Science and Technology, University of Southern California<br>Thesis title: <i>Generating Bicyclist Counts using Volunteered and Professional Geographic Information through a Mobile Application.</i>             |

- 2015 Christie Root, M.S., Geographic Information Science and Technology, University of Southern California  
Thesis title: *Guiding Business Oriented Volunteered Geographic Information Through Geotripper Services: A Case Study of CrossFit Affiliates.*
- 2015 Sarah Gehring, M.S., Geographic Information Science and Technology, University of Southern California  
Thesis title: *Semi-Automated Visualization of Spatial Information in Unstructured Text.*
- 2015 Jamen Underwood, M.S., Geographic Information Science and Technology, University of Southern California  
Thesis title: *Campaign Financing for the U.S. House of Representatives: An Interactive Web Map.*
- 2014 Haynes Bunn, M.S., Geographic Information Science and Technology, University of Southern California  
Thesis title: *Wake County District Overlay: An Online Electoral Data Visualization Application.*
- 2014 Kathryn Metivier, M.S., Geographic Information Science and Technology, University of Southern California  
Thesis title: *Modeling Open Space Acquisition.*

### Other Student Advisement

My work has produced direct participations of students in computer science, data informatics, spatial sciences, geosciences, history, and communication through the research activities and my teaching efforts. Since 2013, I have directly worked with **45 students** in our Spatial Computing Lab. These students came from a variety of background and disciplines, including one local high school student, several visiting international students, and some USC undergraduate and graduate students in geodesign, electrical engineering, spatial informatics, computer science, and data informatics. I also have a successful track record of working with under-represented groups. **One-third of the 45 research students are female students in engineering.**

### External Ph.D. Examiner

- 2016 PhD Thesis Review Panel, Department of Civil Engineering, Indian Institute of Technology, Roorkee.

### Short Courses & Workshops Taught

- 2010 - 2015 Introduction to GIS  
Half-day short courses offered five times for students in the USC SCEC Undergraduate Studies in Earthquake Information Technology (USEIT) Program, University of Southern California, Los Angeles, CA, USA.
- 2014 Introduction to GIS  
One-day short course offered for students and faculties in the School of Social Work, University of Southern California, Los Angeles, CA, USA.

## Professional Service

### International

- 2017 Proceedings Co-Chair, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Los Angeles, CA, USA
- 2016 Proceedings Co-Chair, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, San Francisco, CA, USA
- 2016 Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, San Francisco, CA, USA
- 2016 Member, Scientific Program Committee, International Workshop on Mobile Entity Localization and Tracking in GPS-less Environments, San Francisco, CA, USA
- 2016 Member, Scientific Program Committee, IARIA GEOProcessing. International Conference on Advanced Geographic Information Systems, Applications, and Services, Venice, Italy
- 2016 Member, Scientific Program Committee, IARIA SPACOMM. International Conference on Advances in Satellite and Space Communications, Lisbon, Portugal
- 2016 Member, Scientific Program Committee, IARIA SMART. International Conference on Smart Cities, Systems, Devices and Technologies, Valencia, Spain
- 2016 Member, Scientific Program Committee, Workshop on Expanding the Boundaries of Health Informatics Using Artificial Intelligence, Phoenix, AZ, USA
- 2015 Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Seattle, WA, USA
- 2015 Member, Scientific Program Committee, International Workshop on Mobile Entity Localization and Tracking in GPS-less Environments, Seattle, WA, USA
- 2015 Member, Scientific Program Committee, IARIA GEOProcessing. International Conference on Advanced Geographic Information Systems, Applications, and Services, Lisbon, Portugal
- 2015 Member, Scientific Program Committee, IARIA SPACOMM. International Conference on Advances in Satellite and Space Communications, Barcelona, Spain
- 2015 Member, Scientific Program Committee, IARIA SMART. International Conference on Smart Cities, Systems, Devices and Technologies, Brussels, Belgium
- 2014 Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Dallas, TX, USA
- 2014 Member, Scientific Program Committee, Workshop on Expanding the Boundaries of Health Informatics Using Artificial Intelligence, Arlington, VI, USA
- 2014 Member, Scientific Program Committee, IARIA SMART. International Conference on Smart Cities, Systems, Devices and Technologies, Paris, France
- 2013 Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Orlando, FL, USA
- 2013 Member, Scientific Program Committee, Workshop on Expanding the

2013 Boundaries of Health Informatics Using Artificial Intelligence, Bellevue, WA, USA  
 Member, Scientific Program Committee, IARIA SMART. International Conference on Smart Cities, Systems, Devices and Technologies, Rome, Italy

2012 Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Redondo Beach, CA, USA

2012 Member, Scientific Program Committee, Conference on Artificial Intelligence, Special Track on AI and the Web, Toronto, Ontario, Canada

2012 Member, Scientific Program Committee, IARIA SMART. International Conference on Smart Cities, Systems, Devices and Technologies, Stuttgart, Germany

2012 Member, Scientific Program Committee, International Conference on Ubiquitous Computing, Pittsburgh, PA, USA

2011 Member, Scientific Program Committee, Conference on Artificial Intelligence, Special Track on AI and the Web, San Francisco, CA, USA

2011 Member, Scientific Program Committee, IAPR International Workshop on Graphics Recognition, Seoul, Korea

2010 Member, Scientific Program Committee, Workshop on Knowledge Engineering, Discovery and Dissemination in Health, Hong Kong, China

2010 Member, Dissertation Award Committee, Taiwanese Association for Artificial Intelligence, Taipei, Taiwan

National

2016 Competition Judge, ExpeditionHacks, Los Angeles, CA, USA

State / County

2016 Panel Moderator, Los Angeles Geospatial Summit, Los Angeles, CA, USA

University

University of Southern California

2016 Faculty Member, Fiscal Administrator Search Committee, Spatial Sciences Institute

2016 Event Organizer, Spatial Sciences Institute GeoScavenge, Trojan Family Weekend, USC Dornsife Programs

2015 Faculty Member, Faculty Search Committee, Spatial Sciences Institute

2015 Faculty Member, Director Consultative Committee, Spatial Sciences Institute

2015 Faculty Member, GIS Project Specialist Search Committee, Spatial Sciences Institute

2015 Faculty Member, Visiting Scholar Committee, Spatial Sciences Institute

2012 – 2013 Postdoc Representative, Information Sciences Institute, University of Southern California Postdoctoral Association

2010 – 2015 GIS Mentor, USC SCEC Undergraduate Studies in Earthquake Information Technology (USEIT) Program

2009                                      Symposium Co-Chair, the Third Annual Intelligent Systems Division Graduate Student Symposium, Information Sciences Institute

## **Academic Reviews**

### Academic Journal Reviews

Cartography and Geographic Information Science  
Computers, Environment and Urban Systems  
Data & Knowledge Engineering  
Information Sciences  
International Journal of Digital Earth  
International Journal of Geographical Information Science  
International Journal of Pattern Recognition and Artificial Intelligence  
International Journal of Machine Learning and Cybernetics  
ISPRS International Journal of Geo-Information  
Journal of Spatial Information Science  
Journal of Visual Communication and Image Representation  
Journal of Web Semantics  
Journal of Zhejiang University  
Open Journal of Semantic Web  
PLOS ONE  
Transactions in GIS  
Transactions on Knowledge and Data Engineering

### International Proposal Reviews

2014                                      Lise Meitner-Program, Austrian Science Fund (FWF), Austria

### National Proposal Reviews

2017                                      NIH Proposal Review Panel  
2016                                      NIH Proposal Review Panel  
2015                                      NSF Proposal Review Panel (IIS Division)

## **Professional Certifications**

GISP® (Certified GIS Professional)

## **Professional Society Memberships**

Association for Computing Machinery  
Association for Computing Machinery, SIGSPATIAL  
Institute of Electrical & Electronics Engineers  
International Association for Pattern Recognition TC-10 (Technical Committee on Graphics Recognition)



## Media Interviews and Coverage of Research

- 2017 Kevin Smith, Southern California News Group (March 2017). Quotes on Walmart's latest patent on drone delivery.
- 2017 Samantha Ehlinger, Scoop News Group (March 2017). Quotes on the spatial sciences and computer science participation at ExpeditionHacks.
- 2016 Olga Grigoryants, Los Angeles Business Journal (July 2016). Quotes on the latest FAA drone regulation changes and drone manufactures in Los Angeles.
- 2016 Robert Perkins, USC Media Relations (February 2016). Quotes and coverage on spatial computing research.
- 2016 Lizzie Hedrick, USC News (February 2016). Interview for spatial computing research at Spatial Sciences Institute. The article "Spatial technology opens a window into history" was published online and linked from the USC homepage. Link: <https://news.usc.edu/91625/spatial-technology-opens-a-window-into-history/>.
- 2013 Rosalie Murphy, Viterbi Magazine (May 2013). Interview for research on processing historical maps. The article "Creating the Key" was published in the 2013 USC Viterbi Magazine.

*Last updated: 5/15/17*