

# Yao-Yi Chiang, Ph.D.

Spatial Sciences Institute,  
University of Southern California  
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## Appointments

2013 – Pres. Assistant Professor (Research)  
Spatial Sciences Institute  
University of Southern California

## Education

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

## Honors • Awards

2009 Best Paper Award, Second Place, the Forth Annual Intelligent Systems Division Graduate Student Symposium, Information Sciences Institute  
2008 Best Paper Award, Second Place, the Third Annual Intelligent Systems Division Graduate Student Symposium, Information Sciences Institute  
2007 – 2010 The Viterbi School Doctoral Fellowship, University of Southern California

## Publications

### Journal Articles

under review **Chiang, Y.-Y.**, Leyk, S., Honarvar Nazari, N., Moghaddam, S. (under review) Assessing Impact of Graphical Quality on Automatic Text Recognition in Digital Maps. Submit to *Computers & Geosciences*.  
2014 **Chiang, Y.-Y.** and Knoblock, C. A. (2014) Recognizing Text in Raster Maps. *GeoInformatica*. 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.

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.

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.

#### Peer-Reviewed Conference/Workshop Articles & Book Chapters

2015 **Chiang, Y.-Y.**, Leyk, S., Honarvar Nazari, N., Moghaddam, S. (2015) The Impact of Graphical Quality on Automatic Text Recognition in Digital Maps, In *Proceedings of the 27th International Cartographic Conference* (to appear).

**Chiang, Y.-Y.**, Leyk, S. (2015) Exploiting Online Gazetteer for Fully Automatic Extraction of Cartographic Symbols, In *Proceedings of the 27th International Cartographic Conference* (to appear).

**Chiang, Y.-Y.**, Gehring, S. (2015) Semi-Automated Visualization of Spatial Context in Unstructured Text, In *Proceedings of the 27th International Cartographic Conference* (to appear).

Ngo, V., Swift, J., **Chiang, Y.-Y.** (2015) Visualizing Land Reclamation in Hong Kong: A Web Application, In *Proceedings of the 27th International Cartographic Conference* (to appear).

Fernandes, R., **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* (to appear).

2014 Narayanan, A., Jaiswal, A., **Chiang, Y.-Y.**, Geng, Y., Knoblock, C. A., Szekely, P. (2014) Integration and Automation of Data Preparation and Data Mining, In *Proceedings of the First Workshop on Data Integration and Application*.

Sathe, M., Knoblock, C. A., **Chiang, Y.-Y.**, 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*.

**Chiang, Y.-Y.**, Moghaddam, S., Gupta, S., Fernandes, R., 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*.

**Chiang, Y.-Y.**, Wu, B., Anand, A., Akade, K., 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*.

**Chiang, Y.-Y.**, Chioh, P., and Moghaddam, S. (2014) A Training-by-Example Approach for Symbol Spotting from Raster Maps, In *Proceedings of the Eighth International Conference on Geographic Information Science*.

- Jaiswal, A., **Chiang, Y.-Y.**, Knoblock, C. A., and Lan, L. (2014) Location Prediction With Sparse GPS Data, In *Proceedings of the Eighth International Conference on Geographic Information Science*.
- 2013 **Chiang, Y.-Y.** (2013) Strabo: A Complete System for Label Recognition in Maps, In *the 26th International Cartographic Conference*.
- Zhang, Y., **Chiang, Y.-Y.**, Szekely, P., and Knoblock, C. A. (2013) A Semantic Approach to Retrieving, Linking, and Integrating Heterogeneous Geospatial Data, In *the Workshop on Semantic Cities, International Joint Conference on Artificial Intelligence (IJCAI-13)*.
- 2012 **Chiang, Y.-Y.**, and Knoblock, C. A. (2012). Generating Named Road Vector Data from Raster Map. In *the Seventh International Conference on Geographic Information Science (GIScience), Lecture Notes in Computer Science, 7478, Springer*, pages 57–71.
- Chiang, Y.-Y.**, Leyk, S., and Knoblock, C. A. (2012). Efficient and Robust Graphics Recognition from Historical Maps. In *Graphics Recognition: Achievements, Challenges, and Evolution, Selected Papers of the Ninth International Workshop on Graphics Recognition (GREC), Lecture Notes in Computer Science 7423, Springer*, pages 25–35.
- 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*, pages 1399–1403.
- Chiang, Y.-Y.**, Leyk, S., and Knoblock, C. A. (2011). Harvesting Cartographic Information from Historical Maps: Efficient User Intervention Strategy for Robust Graphics Recognition. In *Proceedings of the Ninth LAPR International Workshop on Graphics Recognition (GREC)*.
- 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*, pages 544–545.
- 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*, pages 3199–3202.
- 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*, volume 7534.
- 2009 **Chiang, Y.-Y.** and Knoblock, C. A. (2009). Extracting road vector data from raster maps. In *Graphics Recognition: Achievements, Challenges, and Evolution, Selected Papers of the 8th International Workshop on Graphics Recognition (GREC), Lecture Notes in Computer Science, 6020, Springer*, pages 93–105.
- 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*, pages 138–147.

- 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*, pages 838–842.
- 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*, pages 1–10.
- 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*, pages 1034–1037.
- 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 *IEEE International Conference on Multimedia & Expo*.
- 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*, pages 267–276.
- 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*, pages 35–38.
- 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 *The 12th ACM International Symposium on Advances in Geographic Information Systems*, pages 47–56.

## Funded Research

- 2015 Automatic Text Recognition in Historical Ordnance Survey Maps, a United Kingdom company (\$60,000)
- Harvesting Historical Geographic Datasets from Maps, University of Southern California Undergraduate Research Associates Program (\$3,200)
- 2014 Preserving Historical Geographic Data Through Automatic Maps Processing, University of Southern California Undergraduate Research Associates Program (\$3,150)
- 2014 Automatic Text Recognition in Historical Ordnance Survey Maps, a United Kingdom company (\$60,000)
- 2013 Harvesting Geographic Information from Heterogeneous Raster Maps, TerraGo Technologies (\$75,000)

## Other Professional Experience

- 2013 – Research Scientist  
Inferlink Corporation, USA
- 2011 – 2013 Lecturer  
Spatial Sciences Institute, University of Southern California
- 2010 – 2013 Postdoctoral Fellow  
Information Sciences Institute, University of Southern California
- 2007 – 2010 Graduate Research Assistant  
Information Sciences Institute, University of Southern California
- 2006 – 2007 Senior Software Engineer  
Geosemble Technologies and Fetch Technologies, USA
- 2005 – 2006 Research Scientist & Programmer  
Information Sciences Institute, University of Southern California
- 2004 – 2005 Graduate Research Assistant  
Information Sciences Institute, University of Southern California
- 2002 – 2003 Software Engineer  
TLJ Intertech, Taipei, Taiwan

## Teaching Experience

### Mobile GIS

Instructor, University of Southern California, Summer 2014, Spring and Summer 2015

### Geospatial Data Integration

Instructor, University of Southern California, Spring 2011 and Spring 2014

### Spatial Databases

Instructor, University of Southern California, Summer and Fall 2011, Summer and Fall 2012, Spring, Summer, and Fall 2013

### GIS Programming and Customization

Instructor, University of Southern California, Spring 2012

### Information Integration on the Web

Teaching assistant, University of Southern California, Spring 2009

## Patent

- 2010 System and Method for fusing Geospatial Data, Ching-Chien Chen, Craig A. Knoblock, Cyrus Shahabi, and Yao-Yi Chiang. US Patent No. 7660441

## Reviews

### Conferences/Workshops

- 2015 Program Committee Member, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems
- Program Committee Member, International Workshop on Mobile Entity Localization and Tracking in GPS-less Environments
- Program Committee Member, International Conference on Smart Systems, Devices and Technologies (SMART)
- 2014 Program Committee Member, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems
- Program Committee Member, Workshop on Expanding the Boundaries of Health Informatics Using Artificial Intelligence
- Program Committee Member, International Conference on Smart Systems, Devices and Technologies (SMART)
- 2013 Program Committee Member, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems
- Program Committee Member, Workshop on Expanding the Boundaries of Health Informatics Using Artificial Intelligence
- Program Committee Member, International Conference on Smart Systems, Devices and Technologies (SMART)
- 2012 Program Committee Member, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems
- Program Committee Member, Conference on Artificial Intelligence, Special Track on AI and the Web
- Program Committee Member, International Conference on Smart Systems, Devices and Technologies (SMART)
- Program Committee Member, International Conference on Ubiquitous Computing
- 2011 Program Committee Member, Conference on Artificial Intelligence, Special Track on AI and the Web
- Program Committee Member, IAPR International Workshop on Graphics Recognition
- 2010 Program Committee Member, Workshop on Knowledge Engineering, Discovery and Dissemination in Health

### Academic Journals

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

Journal of Spatial Information Science

Journal of Visual Communication and Image Representation

Journal of Web Semantics

Journal of Zhejiang University

Transactions in GIS

Transactions on Knowledge and Data Engineering

## Academic Programs

2015 NSF Proposal Review Panel (IIS Division)

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

## Service to the Profession

2012 – Pres. Editorial Board Member, Journal of Geoinformatics and Geostatistics, SciTechnol

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

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

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

2008 Organizer, the 3<sup>rd</sup> Annual Intelligent Systems Division Graduate Student Symposium, Information Sciences Institute, 2008

Volunteer worker, the Information Sciences Institute, Intelligence Systems Division booth in the 2008 AAAI conference, 2008

## Invited Lectures and Seminars

2013 GIS Center, Academia Sinica, Taiwan

Department of Computer Science & Information Engineering, National Taiwan University, Taiwan

Department of Geography, National Taiwan University, Taiwan

Department of Geomatics, National Cheng Kung University, Taiwan

National Security Bureau, Taiwan

- 2011 Department of Computer Science & Information Engineering, National Taiwan University, Taiwan  
Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, China  
Upjohn Center for the Study of Geographical, Western Michigan University, USA
- 2010 CSCI-548 Information Integration on the Web, Department of Computer Science, University of Southern California, USA  
Institute of Information Science, Academia Sinica, Taiwan
- 2009 CSCI-548 Information Integration on the Web, Department of Computer Science, University of Southern California, USA  
Faculty of Informatics, University of Lugano, Switzerland  
Geosemble Technologies, USA
- 2008 CSCI-548 Information Integration on the Web, Department of Computer Science, University of Southern California, USA
- 2007 Department of Computer Science & Information Engineering, National Taiwan University, Taiwan

## Professional Society Memberships

Association for Computing Machinery  
ACM SIGSPATIAL  
Institute of Electrical & Electronics Engineers  
International Association for Pattern Recognition TC-10 (Technical Committee on Graphics Recognition)  
GISP® (Certified GIS Professional)