Yao-Yi Chiang, Ph.D.

Spatial Sciences Institute

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Current Positions

University of Southern California

Faculty Appointments

2017 –	Associate Professor (Research) of Spatial Sciences, Spatial Sciences Institute
2015 –	Faculty of Data Science, Computer Science Department

Other Appointments

2018 –	Data Science Faculty Fellow, Center for Knowledge-Powered Interdisciplinary Data Science
2017 –	Associate Director, Integrated Media Systems Center
2013 –	Director, Spatial Computing Lab, Spatial Sciences Institute
2013 –	Visiting Computer Scientist, Information Sciences Institute

GeoInformatica – An International Journal on Advances of Computer Science for Geographic Information Systems, Springer

2017 –	Action Editor

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., Information Management, National Taiwan University, Taiwan

Professional Experience

Facebook (Spatial Computing, Boston, MA, USA)

2019 –	Machine Learning Consultant

<u>Google AI (New York, NY, USA)</u>

2019 – 2020	Visiting Researcher

<u>AirMap (Santa Monica, CA, USA)</u>

2015 – 2017	Chief Scientist

<u>University of Southern California (Los Angeles, CA, USA)</u>

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

<u>InferLink Corporation (El Segundo, CA, USA)</u>

2013 – 2014	Research Scientist

<u>Geosemble Technologies (El Segundo, CA, USA)</u>

2006 – 2007	Senior Software Engineer

<u>Fetch Technologies (El Segundo, CA, USA)</u>

2006 – 2007	Senior Software Engineer

<u>TLJ Intertech (Taipei, Taiwan)</u>

2002 – 2003	Software Engineer

Honors & Awards

<u>Professional</u>

2017	**Best Paper Award**, the IAPR 8th International Conference on Pattern Recognition Systems, Madrid, Spain
2015	**Best Vision Paper Award** (First Place), the 2015 ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Seattle, WA, USA (award sponsored by the Computing Research Association's Computing Community Consortium under the CCC Blue Sky initiative)

<u>Graduate</u>

2009	**Best Paper Award** (Second Place), the 4th Annual Intelligent Systems Division Graduate Student Symposium, USC Information Sciences Institute, Marina del Rey, CA, USA

2008	**Best Paper Award** (Second Place), the 3rd 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 & Book Edited

2020

[B2]   Werner, M. and **Chiang, Y.-Y.** (eds.) Handbook of Big Geospatial Data, Springer (ISBN 978 3-030-55461-3)

[B1]   **Chiang, Y.-Y.**, Duan, W., Leyk, S., Uhl, J. H., and Knoblock, C. A. (2020). Using Historical Maps in Scientific Studies: Applications, Challenges, and Best Practices, Springer (ISBN 978-3-319-66908-3)

Book Chapters

2020

[BC6]   **Chiang, Y-Y.** and Lin, Y. (2020). Design, Development, Testing, and Deployment of GIS Applications. *The Geographic Information Science & Technology Body of Knowledge* (4th Quarter 2020 Edition), John P. Wilson (Ed.). doi: 10.22224/gistbok/2020.4.2

2017

[BC5]   **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

[BC4]   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

[BC3]   **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

[BC2]   **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

[BC1]   **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

<u>Refereed Journal Articles</u>

2020

[J18]   Karroum, K., Lin, Y., Chiang, Y.-Y., Ben Maissa, Y., El Haziti, M., Sokolov, A., and Delbarre, H (2020). A review of air quality modeling. MAPAN. doi:10.1007/s12647-020-00371-8

[J17]   Zhang, Y., Wang, Y., Li, F., Wu, B., **Chiang, Y.-Y.**, and Zhang, X. (2020). Efficient Deployment of Electric Vehicle Charging Infrastructure: Simultaneous Optimization of Charging Station Placement and Charging Pile Assignment. *IEEE Transactions on Intelligent Transportation Systems*. PP. 1-6. doi:10.1109/TITS.2020.2990694.

[J16]   Duan, W., **Chiang, Y.-Y.**, Knoblock, C. A., Uhl, J. H., and Leyk, S. (2020) Automatic Alignment of Contemporary Vector Data and Georeferenced Historical Maps Using Reinforcement Learning. *International Journal of Geographical Information Science*, 34(4): 824-824

2019

[J15]   Zhang, Y., Ma, Q., **Chiang, Y.-Y.,** Knoblock, C., Zhang, X., Yang, P., ... & Hu, X. (2019). Extracting geographic features from the Internet: A geographic information mining framework. *Knowledge-Based Systems*, 174(15): 57–72. doi: 10.1016/j.knosys.2019.02.031

[J14]   Wu, J., Wei, P., Yuan, X., Shu, Z., **Chiang, Y.-Y.**, Fu, Z., Deng, M. (2019). A New Gabor Filter-based Method for Automatic Recognition of Hatched Residential Areas. *IEEE Access,* 7(1): 40649–40662. doi: 10.1109/ACCESS.2019.2907114

2018

[J13]   Li, K., Habre, R., Deng, H., Urman, R., Morrison, J., Gilliland, F. D., Ambite, J.-L., Stripelis, D., **Chiang, Y.-Y.**, Lin, Y., Bui, A. A. T., King, C., Hosseini, A., Van Vliet, E., Majid, S., Eckel, S. P. (2018). Applying Multivariate Segmentation Methods to Human Activity Recognition from Wearable Sensors Data. *JMIR mHealth and uHealth*, 7(2): e11201. doi: 10.2196/11201

[J12]   Uhl, J. H., Leyk, S., **Chiang, Y.-Y.**, Duan, W., and Knoblock, C. A. (2018). Spatializing Uncertainty in Image Segmentation Using Weakly Supervised Convolutional Neural Networks: A Case Study from Historical Map Processing. *IET Image Processing*, 12(11), 2084-2091

[J11]   VoPham, T., Hart, J. E., Laden, F., **Chiang, Y.-Y.** (2018). Emerging Trends in Geospatial Artificial Intelligence (geoAI): Potential Applications for Environmental Epidemiology. *Environmental Health,* 17(1):40. doi: 10.1186/s12940-018-0386-x

[J10]   Uhl, J. H., Leyk, S., **Chiang, Y.-Y.**, Duan, W., and Knoblock, C. A. (2018). Map Archive Mining: Visual-Analytical Approaches to Explore Large Historical Map Collections. *ISPRS International Journal of Geo-Information*, 7(4), 148. doi: 10.3390/ijgi7040148

[J9]   Wu, J., Wan, Y., **Chiang, Y.-Y.**, Fu, Z., Deng, M. (2018). A Matching Algorithm Based on Voronoi Diagram for Multi-Scale Polygonal Residential Areas. *IEEE Access*, 6: 4904 – 4915. doi: 10.1109/ACCESS.2018.2793302

2017

[J8]   Duan, W. and **Chiang Y.-Y.** (2017). SRC: A Fully Automatic Geographic Feature Recognition System. *SIGSPATIAL Special*, 9(3):6 – 7. doi: 10.1145/3178392.3178396

[J7]   Lin, H. and **Chiang Y.-Y.** (2017). SRC: Automatic Extraction of Phrase-level Map Labels from Historical Maps. *SIGSPATIAL Special*, 9(3):14–15. doi: 10.1145/3178392.3178400

2016

[J6]   **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

[J5]   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

[J4]   **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

[J3]   **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

[J2]   **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

[J1]   **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

Referee Conference & Symposium Proceedings[1]

2020

[C70]   Tavakkol, S., Han, F., Mayer, B., Phillips, M., Shahabi, C., **Chiang, Y.-Y.**, & Kiveris, R. (2020). Kartta Labs: Collaborative Time Travel. Hawaii International Conference on System Sciences (accepted)

[C69]   Lin, Y., **Chiang, Y.-Y.**, Franklin, M., Eckel, P. S., and Ambite, J. L. (November 2020). Building Autocorrelation-Aware Representations for Fine-Scale Spatiotemporal

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[1] 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.).

Prediction, In *Proceedings of IEEE International Conference on Data Mining (ICDM)*, Sorrento, Italy (9.8% acceptance rate)

[C68]   Li, Z., **Chiang, Y.-Y.**, Tavakkol, S., Shbita, B., Uhl, J. H., Leyk, S., and Knoblock, C. A. (August 2020). An Automatic Approach for Generating Rich, Linked Geo-Metadata from Historical Map Images, In *Proceedings of ACM Knowledge Discovery and Data Mining Conference (KDD)*, San Diego, CA, USA

[C67]   Shbita, B., Knoblock, C. A., Duan, W., **Chiang, Y.-Y.**, Uhl, J. H. and Leyk, S. (June 2020). Building Linked Spatio-Temporal Data from Vectorized Historical Maps. In *Proceedings of the Extended Semantic Web Conference (ESWC)*, pp. 409-426, Heraklion, Greece

2019

[C66]   Khider, D., Gil, Y., Cobourn, K.M., Deelman, E., Duffy, C., Ferreira da Silva, R., Kemanian, A., Knoblock, C., Kumar, V., Peckham, S.D. and **Chiang, Y.-Y.** (December 2019). MINT: An intelligent interface for understanding the impacts of climate change on hydrological, agricultural and economic systems. *American Geophysical Union, Fall Meeting 2019 (AGUFM, 2019)*, pp. PA33C–1108, San Francisco, CA, USA

[C65]   **Chiang, Y.-Y.**, Lin, Y., Franklin, M., Eckel, S. P., Ambite, J. L., and Ku, W., (December 2019). Building Explainable Prediction Analytics for Location-Dependent Time-Series Data. In *Proceedings of the First IEEE International Conference on Cognitive Machine Intelligence (CogMI)*, pp. 202–209, Los Angeles, CA, USA (invited paper)

[C64]   Yue, M., Li, Y., Yang, H., Ahuja, R., **Chiang, Y.-Y.**, and Shahabi, C. (December 2019). DETECT: Deep Trajectory Clustering for Mobility-Behavior Analysis. In *Proceedings of the 2019 IEEE International Conference on Big Data (Big Data)*, pp. 988–997, Los Angeles, CA, USA

[C63]   Anastasiou, C., Lin, J., He, C., Chiang, Y.-Y., and Shahabi, C. (November 2019). ADMSv2: A Modern Architecture for Transportation Data Management and Analysis. In *Proceedings of the 2nd ACM SIGSPATIAL International Workshop on Advances on Resilient and Intelligent Cities (ARIC 2019)*, pp. 25–28, Chicago, IL, USA

[C62]   Tavakkol, S., **Chiang, Y.-Y.**, Waters, T., Feng, H., Prasad, K., and Kiveris, R. (November 2019). Kartta Labs: Unrendering Historical Maps. In *Proceedings of the Third GeoAI Workshop*, pp. 48–51, Chicago, IL, USA

[C61]   Gao, Y., Duan, Z., Shi, W., Feng, J., and **Chiang, Y.-Y.** (October 2019) Personalized Recommendation Method of POI based on Deep Neural Network. In *Proceedings of the 6th International Conference on Behavioral, Economic, and Socio-Cultural Computing (BESC)*, pp. 1–6, Beijing, China

[C60]   Shbita, B., Vu, B., Feldman, D., Pham, M., Rajendran, A., Knoblock, C. A., Pujara, J., and **Chiang, Y.-Y.** (September 2019). Creating a FAIR Data Catalog to Support Scientific Modeling. In *Proceedings of the Workshop on Advanced Knowledge Technologies for Science in a FAIR World (AKTS) (Co-located with the IEEE eScience Conference)*, Marina del Ray, CA, USA

[C59]   Avelar, L. J., **Chiang, Y.-Y.**, Vos, R. O., Rico, J. J., Qian, Y., Yin, X. and Vavra-Musser, K., (July 2019). Los Angeles Homelessness and the Access to Water, Sanitation, and Hygiene. In *Proceedings of the 29th International Cartographic Conference*, Tokyo, Japan.

[C58]   Zhang, J., Shen, T., Wang, W., Jiang, X., Ku, W., Sun, M., and **Chiang, Y.-Y.** (June 2019). A VLOS Compliance Solution to Ground/Aerial Parcel Delivery Problem. In *Proceedings of*

the 20th IEEE International Conference on Mobile Data Management (MDM), pp. 201–209, Hong Kong, China

[C57] Garijo, D., Khider, D., Ratnakar, V., Gil, Y., Cobourn, K., Deelman, E., Duffy, C., Ferreira da Silva, R., Kemanian, A., Knoblock, C. A., Kumar, V., Peckham, S., **Chiang, Y.-Y.**, Khandelwal, A., Pham, M., Pujara, J., Stoica, M., Tayal, K., Vu, B., Feldman, D., Shu, L., Dabrowski, A., Lewis, D. H., and Pierce, S. (March 2019). An Intelligent Interface for Integrating Climate, Hydrology, Agriculture, and Socioeconomic Models. In *Proceedings of the ACM International Conference on Intelligent User Interfaces '19 Companion*, pp. 111 – 112, Marina del Ray, CA, USA

2018

[C56] Cheng, Y., & **Chiang, Y.-Y.** (November 2018). Automatic intersection extraction and building arrangement with StarCraft II maps. In *Proceedings of the 26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 618 – 619, Seattle, WA, USA

[C55] Lin, Y., Mago, N., Gao, Y., Li, Y., **Chiang, Y.-Y.**, Shahabi, C., and Ambite, J. L. (November 2018). Exploiting Spatiotemporal Patterns for Accurate Air Quality Forecasting using Deep Learning. In *Proceedings of the 26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 359 – 368, Seattle, WA, USA

[C54] Nguyen, K., Yang, J., Lin, Y., Lin, J., **Chiang, Y.-Y.** and Shahabi, C. (November 2018). Los Angeles Metro Bus Data Analysis Using GPS Trajectory and Schedule Data (Demo Paper) In *Proceedings of the 26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems,* pp. 560 – 563, Seattle, WA, USA

[C53] Lin, H., **Chiang, Y.-Y.** (November 2018). An Uncertainty Aware Method for Geographic Data Conflation. In *Proceedings of the 5th ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data*, pp. 20 – 27, San Francisco, CA, USA

[C52] Lin, C., Su, H., Knoblock, C. A., **Chiang, Y.-Y.**, Duan, W., Leyk, S., and Uhl, J. H. (October 2018). Building Linked Data from Historical Maps. In *Proceedings of the SemSci 2018: Enabling Open Semantic Science*, pp. 59 – 67, Monterey, CA, USA

[C51] Eckel, S., Habre, R., Li, K., Deng, H., Urman, R., Morrison, J., Gauderman, W. J., Ambite, J. L., **Chiang, Y.-Y.**, Stripelis, D., Lin Y., and Gilliland, F. D. (September 2018). Methods for Using Personal Sensor Monitoring Systems to Predict Asthma Exacerbations. *ERS International Congress*, Paris, France

[C50] Gil, Y., Cobourn, K., Deelman, E., Duffy, C., da Silva, R. F., Kemanian, A., Knoblock, C., Kumar, V., Peckham, S., Carvalho, L., **Chiang, Y.-Y.**, Garijo, D., Khider, D., Khandelwal, A., Pahm, M., Pujara, J., Ratnakar, V., Stoica, M., and Vu, B. (June 2018). MINT: Model Integration Through Knowledge-Powered Data and Process Composition. In *Proceedings of the Ninth International Congress on Environmental Modeling and Software*, Ft Collins, CO, USA

[C49] Uhl, J. H., Leyk, S., **Chiang, Y.-Y.**, Duan, W., and Knoblock, C. A. (May 2018). Exploring the Potential of Deep Learning for Settlement Symbol Extraction from Historical Map Documents. *UCGIS/AutoCarto*, pp. 123 – 124, Madison, WI, USA

[C48] Duan, W., **Chiang, Y.-Y.**, Knoblock, C. A., Uhl, J. H., and Leyk, S. (May 2018). Automatic Generation of Precisely Delineated Geographic Features from Georeferenced Historical Maps Using Deep Learning, *UCGIS/AutoCarto*, pp. 59 – 63, Madison, WI, USA

[C47]   Yu, X., Cheng, Y., Lin Y., **Chiang, Y.-Y.**, Stripelis, D., and Ambite, J. L. (May 2018). MAPINS: An Intra-City PM2.5 Modeling Web Application Using A Scalable Data Management and Analysis System Integrating Public Multi-Source Data. *UCGIS/AutoCarto*, pp. 135 – 145, Madison, WI, USA

[C46]   **Chiang, Y.-Y.**, Feldman, D. (January 2018). Next Generation Framework for Imagery Recognition and Analysis. *The 1st workshop of the NSF project: SI2-S2I2 Conceptualization: Geospatial Software Institute (GSI)*, Los Angeles, CA, USA

2017

[C45]   Uhl, J. H., Leyk, S., **Chiang, Y.-Y.**, Duan, W., and Knoblock, C. A. (November 2017). Machine-learning based Approaches for Extracting Settlement Features from Historical Maps. In *Proceedings of the International Land Use Symposium 2017 (Spatial data modelling and visualisation to enlighten sustainable policy making)*, Dresden, Germany

[C44]   Duan, W., **Chiang, Y.-Y.**, Knoblock, C. A., Vinil, J., Feldman, D., Uhl, J. H., and Leyk, S. (November 2017). Automatic Alignment of Vector Data with Geographic Features for Feature Recognition in Historical Maps. In *Proceedings of the First GeoAI Workshop*, pp. 45 – 54, Redondo Beach, CA, USA

[C43]   Lin, Y., **Chiang, Y.-Y.**, Pan F., Stripelis, D., Ambite, J. L., Eckel, S. P., and Habre, R. (November 2017). Mining Public Datasets for Modeling Intra-city PM2.5 Concentrations at a Fine Spatial Resolution. In *Proceedings of the 25th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, Article No. 25, Redondo Beach, CA, USA

[C42]   Holmes-Wong, D., **Chiang, Y.-Y.**, (October 2017). Unlocking Maps for Discovery and Other Purposes, Digital Library Federation (DLF) Forum, Pittsburg, PA, USA

[C41]   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. (September 2017). Methods for Predicting Asthma Exacerbations using Personal Sensor Monitoring systems, *International Society for Environmental Epidemiology (ISEE)*, Sydney, Australia

[C40]   Uhl, J. H., Leyk, S., **Chiang, Y.-Y.**, Duan, W., and Knoblock, C. A. (July 2017). Extracting Human Settlement Footprint from Historical Topographic Map Series Using Context-Based Machine Learning. In *Proceedings of the IAPR 8th International Conference on Pattern Recognition Systems*, pp. 15 – 21, Madrid, Spain **(best paper award)**

[C39]   **Chiang, Y.-Y.**, Jain, A., Bandyopadhyay, B., Knoblock, A. C. (June 2017). Automatic Learning of User Design Rationales from Examples. In *Proceedings of the Symposium on Solid and Physical Modeling (SPM)*, Berkeley, CA, USA

[C38]   Nanetti, A., Cattaneo, A., Cheong, S.-A., **Chiang, Y.-Y.**, and Lin, C.-Y. (July 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, DC, USA

[C37]   Leyk, S. and **Chiang, Y.-Y.** (July 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, DC, USA

[C36]   **Chiang, Y.-Y.** (July 2017). Linking Historical Maps to the USC Shoah Foundation Visual History Archive. In *Proceedings of the 28th International Cartographic Conference,* Washington, DC, USA

[C35]   Stripelis, D., Ambite, J. L., **Chiang, Y.-Y.**, Eckel, S. P., and Habre, R. (April 2017). A Scalable Data Integration and Analysis Architecture for Sensor Data of Pediatric Asthma, In *Proceedings of the 2017 IEEE 33rd International Conference on Data Engineering (ICDE)*, pp. 1407-1408, San Diego, CA, USA

2016

[C34]   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

[C33]   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 IEEE International Conference on Pattern Recognition (ICPR)*, pp. 3993–3998, Cancun, Mexico

[C32]   **Chiang, Y.-Y.** (2016). Exploiting Context in Cartographic Evolutionary Documents to Extract and Build Linked Spatial-Temporal Datasets. In *Proceedings of the 2016 Conference on Complex Systems*, Complex Systems Society, Amsterdam, Netherlands (invited abstract & speech)

[C31]   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

[C30]   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

[C29]   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

[C28]   **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)**

[C27]   **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

[C26]   **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

[C25]   **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

[C24]   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

[C23] 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

[C22] 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

[C21] 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

[C20] **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

[C19] **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

[C18] **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.

[C17] 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

[C16] **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.

[C15] 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

[C14] **Chiang, Y.-Y.** and Knoblock, C. A. (2011). Recognition of Multi-Oriented, Multi-Sized, and Curved Text. In *Proceedings of the 11th IEEE International Conference on Document Analysis and Recognition (ICDAR)*, pp. 1399–1403, Beijing, China

[C13]   **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

[C12] **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

[C11] **Chiang, Y.-Y.** and Knoblock, C. A. (2010). An Approach for Recognizing Text Labels in Raster Maps. In *Proceedings of the 20th IEEE International Conference on Pattern Recognition (ICPR)*, pp. 3199–3202, Istanbul, Turkey

[C10] 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

[C9] **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

[C8] **Chiang, Y.-Y.** and Knoblock, C. A. (2009). A Method for Automatically Extracting Road Layers from Raster Maps. In *Proceedings of the Tenth IEEE International Conference on Document Analysis and Recognition (ICDAR)*, pp. 838–842, Barcelona, Span

[C7] **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

[C6] **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

[C5] **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 IEEE International Conference on Pattern Recognition (ICPR)*, pp. 1034–1037, Hong Kong, China

[C4] 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 IEEE International Conference on Multimedia & Expo*, pp. 93–96, Toronto, Ontario, Canada

2005

[C3] **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

[C2] 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 ACM International Workshop on Geographic Information Retrieval*, pp. 35–38, Bremen, Germany

2004

[C1]   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, DC, 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

Presentations[2]

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

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[2] The presentations with peer-reviewed publications are in the section of Publication: Conference & Symposium Proceedings.

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

2019   **Chiang, Y.-Y.**, Introduction to Data Mining and Spatial Computing, ISE 599: Applied Predictive Analytics, University of Southern California, Los Angeles, CA, USA

2018   **Chiang, Y.-Y.**, A Deep Learning Approach to Jointly Exploit Spatial and Temporal Patterns for Accurate Air Quality Forecasting, Tongji University, Shanghai, China

2018   **Chiang, Y.-Y.**, A Deep Learning Approach to Jointly Exploit Spatial and Temporal Patterns for Accurate Air Quality Forecasting, Fudan University, Shanghai, China

2018   **Chiang, Y.-Y.**, A Deep Learning Approach to Jointly Exploit Spatial and Temporal Patterns for Accurate Air Quality Forecasting, Northwest University, Xi'an, China

2018   **Chiang, Y.-Y.**, A Deep Learning Approach to Jointly Exploit Spatial and Temporal Patterns for Accurate Air Quality Forecasting, Academia Sinica, Taipei, Taiwan

2018   **Chiang, Y.-Y.**, Geographic Data, ASCJ420: Annenberg Collaboratory, University of Southern California, Los Angeles, CA, USA

2017   **Chiang, Y.-Y.**, Mining Public Datasets for Modeling Intra-city PM2.5 Concentrations at a Fine Spatial Resolution, Department of Geography, National Taiwan University, Taipei, Taiwan

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

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, DC, 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

<u>External</u>

2020– 2021	**Large-scale and Long-term Forecasting of Performance Measurement of Public Transportation Systems**
	State of California, Department of Transportation (Caltrans); **Co-PI**; Shahabi, C., Computer Science Department, University of Southern California, PI; $27,633, Chiang (total costs)
2020 – 2020	**AI-Driven Analytics for Network Operations**
	NTT Global Networks; **PI**; $95,700, Chiang (total costs)
2019 – 2020	**DETECT: An All-Scale Trajectory Clustering Approach for Moving Behavior Detection with Spatiotemporal Deep Embedded Neural Networks**
	National Geospatial-Intelligence Agency (NGA); **Co-PI**; Shahabi, C., Computer Science Department, University of Southern California, PI; $ 70,582, Chiang (total costs)
2018 – 2019	**Analysis Modernization through Content and Analytics Technologies (AMCAT)**

BAE Systems; **PI**; $49,102 (total costs)

| 2018 – 2019 | **Deep-Learning Traffic Flow Prediction for Forecasting Performance Measurement of Public Transportation Systems** |

State of California, Department of Transportation (Caltrans); **Co-PI**; Shahabi, C., Computer Science Department, University of Southern California, PI; $20,731, Chiang (total costs)

| 2017 – 2021 | **LA Safe** |

LA Metro; **Co-PI**; Giuliano, G., METRANS Transportation Center, University of Southern California and Shahabi, C., Computer Science Department, University of Southern California, PIs; $151,734, Chiang (total costs)

| 2017 – 2021 | **MINT: Model INTegration across disciplines** |

Defense Advanced Research Projects Agency (DARPA); **Co-I**; Gil, Y., Information Sciences Institute, University of Southern California, PI; $387,037, Chiang (total costs)

| 2017 – 2018 | **Public Health - Using Historical Maps for Unlocking Long-Term Human-Environment Interactions** |

Microsoft Corporation; **PI**; $20,000 (total costs)

| 2017 – 2018 | **Exploiting Historical Maps for Understanding Human-Environment Interactions on a Large Spatiotemporal Scale** |

NVIDIA Corporation; **PI**; $4,800 (total costs)

| 2017 – 2018 | **Unlocking Maps: Automatic and Streamlined Metadata Creation for Digital Collections** |

National Endowment for the Humanities; **Co-PI**; Holmes-Wong, D., Digital Library, University of Southern California; PI; $45,483, Chiang (total 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; $339,812, 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; $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; $87,803, Chiang (total 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 | **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)
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; $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; $50,194, Chiang (direct costs)

<u>Internal</u>

2019 – 2020	**Generating Linked Metadata from Historical Map Scans**
	Undergraduate Research Associates Program, University of Southern California; **PI**; $6,600 (direct costs)
2018 – 2019	**Homelessness and the Access to: Water, Sanitation, and Hygiene (WaSH)**
	Undergraduate Research Associates Program, University of Southern California; **PI**; $4,605 (direct 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 – 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	**Linking Historical Maps to USC Shoah Foundation Visual History Archive**
	Undergraduate Research Associates Program, University of Southern California; **PI**; $3,200 (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)

Teaching

<u>Current Courses Taught</u>

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

2019 – 2020	Dr. Ying Zhang, Integrated Media Systems Center & Spatial Sciences Institute, University of Southern California (Visiting Scholar; Associate Professor, School of Control and Computer Engineering, North China Electric Power University, China)
2019 – 2020	Dr. Xin Zhang, Integrated Media Systems Center & Spatial Sciences Institute, University of Southern California (Visiting Scholar; Associate Professor, School of Computer Science and Technology, Changchun University of Science and Technology, China)
2019 – 2020	Dr. Hui Luan, Integrated Media Systems Center & Spatial Sciences Institute, University of Southern California (Visiting Scholar; Associate Professor, College of Instrumentation and Electrical Engineering, Jilin University, China)
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 (Visiting Scholar)
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

Current	Weiwei Duan, (Ph.D. Program in Computer Science, University of Southern California)
	Yijun Lin, (Ph.D. Program in Computer Science, University of Southern California)
	Dan Feldman, (Ph.D. Program in Computer Science, University of Southern California)
	Hayley Song, (Ph.D. Program in Computer Science, University of Southern California)
	Zekun Li, (Ph.D. Program in Computer Science, University of Southern California)

Johanna Avelar Portillo, (Ph.D. Program in Population, Health and Place Graduate Program, University of Southern California)

Lois Park, (Ph.D. Program in Population, Health and Place Graduate Program, University of Southern California)

2015   Nancy McMahon, M.S., Geographic Information Science and Technology, University of Southern California

Thesis title: *The Role of GIS in Asset Management: County of Kauai Department of Parks and Recreation a Need for an Asset Management Program.*

2015   Patricia Jula, M.S., Geographic Information Science and Technology, University of Southern California

Thesis title: *Generating Bicyclist Counts using Volunteered and Professional Geographic Information through a Mobile Application*.

2015   Christie Root, M.S., Geographic Information Science and Technology, University of Southern California

Thesis title: *Guiding Business Oriented Volunteered Geographic Information Through Geotrigger 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.*

PhD Dissertation Committee

Current   Jiawen Fang, (Ph.D. Program in City/Urban, Community and Regional Planning, University of Southern California)

Yougeng Lu, (Ph.D. Program in City/Urban, Community and Regional Planning, University of Southern California)

2019   Huiyu Deng, (Ph.D. Program in Biostatistics, University of Southern California)

Thesis title: *Flexible Methods for Longitudinal Data from Epidemiology and mHealth Studies using Machine Learning*

2018   Benedikt Budig, (Ph.D. Program in Computer Science, University of Würzburg)

Thesis title: *Extracting Spatial Information from Historical Maps: Algorithms and Interaction*.

Other Student Advisement

My work has produced direct participation of students in computer science, data science, spatial sciences, geosciences, history, and communication through joint research activities and my teaching efforts. Since 2013, I have directly worked with more than 70 students in my Spatial Computing Lab. These students came from a variety of backgrounds, including one local high-school student, several visiting international students, and USC undergraduate and graduate students**. I also have a successful track record of recruiting and working with under-represented groups. More than one-third of my research students are female students in engineering.**

External Ph.D. Examiner

2018	PhD Thesis Review Panel, Department of Computer Science, University of Würzburg, Germany
2016	PhD Thesis Review Panel, Department of Civil Engineering, Indian Institute of Technology, Roorkee, India

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

2020	Program Co-Chair, International Track, International Conference on Technologies and Applications of Artificial Intelligence (TAAI), Taipei, Taiwan
	Member, Scientific Program Committee, IEEE International Conference on Tools with Artificial Intelligence, Virtual Conference
	Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Virtual Conference
	Sponsors Co-Chair, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Virtual Conference
	Member, Scientific Program Committee, the 3rd ACM SIGSPATIAL International Workshop on Advances on Resilient and Intelligent Cities, Virtual Conference
	Member, Scientific Program Committee, International Workshop on Health Intelligence (in conjunction with the 2020 AAAI Conference on Artificial Intelligence), New York, NY, USA
2019	Member, Scientific Program Committee, IEEE International Conference on Tools with Artificial Intelligence, Portland, Oregon, USA

	Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Chicago, IL, USA
	Member, Scientific Program Committee, the 3rd Workshop on GeoAI: AI and Deep Learning for Geographic Knowledge Discovery, Chicago, IL, USA
	Member, Scientific Program Committee, the 2nd ACM SIGSPATIAL International Workshop on Advances on Resilient and Intelligent Cities, Chicago, IL, USA
	Member, Scientific Program Committee, Joint Workshop on Health Intelligence (in conjunction with the 33rd AAAI Conference on Artificial Intelligence), Honolulu, Hawaii, USA
2018	Member, Scientific Program Committee, IEEE International Conference on Tools with Artificial Intelligence, Volos, Greece
	Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Seattle, WA, USA
	Member, Scientific Program Committee, the 2nd Workshop on GeoAI: AI and Deep Learning for Geographic Knowledge Discovery, Seattle, WA, USA
	Member, Scientific Program Committee, the 2nd Workshop on Geospatial Humanities, Seattle, WA, USA
	Member, Scientific Program Committee, Joint Workshop on Health Intelligence (in conjunction with the 32nd AAAI Conference on Artificial Intelligence), New Orleans, LA, USA
	Member, Scientific Program Committee, American Medical Informatics Association 2018 Annual Symposium, San Francisco, CA, USA
	Member, Scientific Program Committee, IARIA GEOProcessing. International Conference on Advanced Geographic Information Systems, Applications, and Services, Rome, Italy
2017	Member, Scientific Program Committee, IEEE International Conference on Tools with Artificial Intelligence, Boston, MA, USA
	Proceedings Co-Chair, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Redondo Beach, CA, USA
	Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Redondo Beach, CA, USA
	Member, Scientific Program Committee, the First Workshop on GeoAI: AI and Deep Learning for Geographic Knowledge Discovery, Los Angeles, CA, USA
	Member, Scientific Program Committee, Joint Workshop on Health Intelligence (in conjunction with the 31th AAAI Conference on Artificial Intelligence), San Francisco, CA, USA
	Member, Scientific Program Committee, IARIA GEOProcessing. International Conference on Advanced Geographic Information Systems, Applications, and Services, Nice, France
2016	Proceedings Co-Chair, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, San Francisco, CA, USA
	Member, Scientific Program Committee, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, San Francisco, CA,

USA

Member, Scientific Program Committee, International Workshop on Mobile Entity Localization and Tracking in GPS-less Environments, San Francisco, CA, USA

Member, Scientific Program Committee, IARIA GEOProcessing. International Conference on Advanced Geographic Information Systems, Applications, and Services, Venice, Italy

Member, Scientific Program Committee, IARIA SPACOMM. International Conference on Advances in Satellite and Space Communications, Lisbon, Portugal

Member, Scientific Program Committee, IARIA SMART. International Conference on Smart Cities, Systems, Devices and Technologies, Valencia, Spain

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
	Member, Scientific Program Committee, International Workshop on Mobile Entity Localization and Tracking in GPS-less Environments, Seattle, WA, USA
	Member, Scientific Program Committee, IARIA GEOProcessing. International Conference on Advanced Geographic Information Systems, Applications, and Services, Lisbon, Portugal
	Member, Scientific Program Committee, IARIA SPACOMM. International Conference on Advances in Satellite and Space Communications, Barcelona, Spain
	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
	Member, Scientific Program Committee, Workshop on Expanding the Boundaries of Health Informatics Using Artificial Intelligence, Arlington, VI, USA
	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
	Member, Scientific Program Committee, Workshop on Expanding the 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
	Member, Scientific Program Committee, Conference on Artificial Intelligence, Special Track on AI and the Web, Toronto, Ontario, Canada
	Member, Scientific Program Committee, IARIA SMART. International Conference

on Smart Cities, Systems, Devices and Technologies, Stuttgart, Germany

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

National

2019	PI, Cooperative Research and Development Agreement between National Geospatial-Intelligence Agency (NGA) and the University of Southern California
2016	Judge, Expedition Hacks (sponsored by the National Geospatial-Intelligence Agency), Los Angeles, CA, USA

State / County

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

University

University of Southern California

2019	Faculty Member, Library Faculty Search Committee, USC Libraries
2018	Faculty Member, Office and Event Manager Search Committee, Spatial Sciences Institute
2017	Faculty Member, Faculty Merit Review Committee, Spatial Sciences Institute
2016	Faculty Member, Fiscal Administrator Search Committee, Spatial Sciences Institute
	Event Organizer, Spatial Sciences Institute GeoScavenge, Trojan Family Weekend, USC Dornsife Programs
2015	Faculty Member, Faculty Search Committee, Spatial Sciences Institute
	Faculty Member, Director Consultative Committee, Spatial Sciences Institute
	Faculty Member, GIS Project Specialist Search Committee, Spatial Sciences Institute
	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

Academic Reviews

<u>Journal Editorial SERVICES</u>

2017 – Action Editor, GeoInformatica (Springer)

<u>Academic Journal Reviews</u>

ACM Transactions on Spatial Algorithms and Systems

Cartography and Geographic Information Science

Computer & Graphics

Computers, Environment and Urban Systems

Computers in Biology and Medicine

Data & Knowledge Engineering

GeoInformatica

Historical Methods: A Journal of Quantitative and Interdisciplinary History

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

Remote Sensing Applications: Society and Environment

Signal, Image and Video Processing

Transactions in GIS

Transactions on Knowledge and Data Engineering

Transactions on Spatial Algorithms and Systems

<u>International Proposal Reviews</u>

2020	The Netherlands Organisation for Scientific Research (Applied and Engineering Scineces), the Netherlands
2019	National Research Foundation, Singapore
2014	Lise Meitner-Program, Austrian Science Fund (FWF), Austria

National Proposal Reviews

2020	NSF Proposal Review Panel (Division of Information and Intelligent Systems)
	NIH Proposal Review Panel
2019	NSF Proposal Review Panel (Division of Information and Intelligent Systems)
	NSF Proposal Review (ad-hoc review for the Methodology, Measurement, and Statistics (MMS) program)
2017	NIH Proposal Review Panel
2016	NIH Proposal Review Panel
2015	NSF Proposal Review Panel (Division of Information and Intelligent Systems)

Promotion and Tenure Reviews

University of Würzburg

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

2020	Stephen Koenig, USC Dornsife Magazine (July 2020). Interview for research on AI. The article "Do Humans Dream of Androids Dreaming?" was published in the 2013 USC Viterbi Magazine.
2018	NPR (89.3 KPCC), Take Two (June 2018). Radio interview on air quality research
2017	Valerie Osier, LA Daily News (December 2017). Quotes on the usage of drones in firefighting
	Kevin Smith, Southern California News Group (March 2017). Quotes on Walmart's latest patent on drone delivery
	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
	Robert Perkins, USC Media Relations (February 2016). Quotes and coverage on spatial computing research
	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, USC 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: 12/4/20