

# Xinyi LIU

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## WORK EXPERIENCE

- Software Development Intern**, ESRI, Redlands, CA May 2018 - Present
- Implemented cartogram algorithms to visualize area-scaled maps based on attribute data (Python, C)
  - Performed geometry manipulation of geographic features for perspective views (Python)
- Research Assistant**, Department of Geography, University of Wisconsin-Madison, Madison, WI Sep 2016 - May 2018
- Designed and implemented new density-based clustering algorithms – (Space-Time) VDBSCAN (Java, R, SQL)
  - Aggregated tweet data using multiple algorithms such as DBSCAN and VDBSCAN (Java, PostgreSQL)
  - Developed websites to effectively visualize aggregation results in 2D/3D maps and charts (AJAX, jQuery, D3, JSON)
- Engineer**, Augur Intelligence Technology Co. Ltd., Guangzhou, China Sep 2015 - Jun 2016
- Designed, implemented and tested new functions for web urban planning systems (ArcGIS, Oracle, Java, JavaScript)
  - Participated in customer research and customization of web planning products

## EDUCATION

- GIS/Cartography**, M.S., University of Wisconsin-Madison, USA Sep 2016 - May 2018
- CS courses: Algorithm, Machine Learning, Artificial Intelligence, Data Structure, Advanced R (GPA: 4.0/4.0)
  - GIS courses: Spatial Computing, Web/Mobile App Development, UI/UX Design (GPA: 4.0/4.0)
- Earth Information Science and Technology**, B.S., Sun Yat-sen University, China Sep 2011 - July 2015

## PROJECTS

- Optimization of the Midwest electric power system, UW-Madison May 2017 - Jan 2018
- Simplified road networks and programmed Dijkstra algorithm on them to find the shortest path between sites along the transmission lines (QGIS, Java, PostgreSQL)
- Improvement of Twitter gender classifier using user mobility features, UW-Madison Oct 2017 - Dec 2017
- Implemented Machine Learning models including Naïve Bayes Network, Random Forest, Ada Boost and Multi-Layer Neural Network (Python: scikit-learn)
  - Increased classification accuracy and recall despite a sparsity of relevant data (Java, Python)
- Geovisualization of historic U.S. flight delays, UW-Madison Mar 2017 - May 2017
- Developed dynamic visualization of an interactive map to mine flight delay patterns from flight status data (Node.js, AJAX, jQuery, D3)
- Android app development, for National GIS Skill Competition, China May 2014 - Nov 2014
- Led a four people group and won the Third Prize and the Innovation Award
  - Developed a mobile map app for campus navigation and social entertainment (MapGIS SDK, Java, XML)
- Predictive mapping of reservoir sections based on Markov Random Fields (MRF) Nov 2014 - Jun 2015
- Implemented a Markov Mesh Model to effectively capture spatial continuity of the reservoir geologic facies
  - Programmed statistical modeling methods such as General Linear Model and PCA (C++)
  - Transformed 2D geological cross sections into 3D models based on borehole data (C#, ArcGIS .NET)

## PUBLICATION

- X. Liu, Q. Huang, Z. Li and M. Wu, “The Impact of MTUP to Explore Online Trajectories for Human Mobility Studies,” in Proceedings of the 1<sup>st</sup> ACM SIGSPATIAL International Workshop on Prediction of Human Mobility. ACM, Redondo Beach, CA, 2017.

## TECHNICAL SKILLS

- Proficient in: Java, JavaScript, R, ArcGIS
- Familiar with: SQL, C++, Python, C, C#, HTML, CSS, XML, PostgreSQL, Oracle

## HONORS & ACTIVITIES

- Petchenik Graduate Award (2<sup>nd</sup> Place for Cartographic Design), UW-Madison 2018
- \$500 Trewartha Research Grant, UW-Madison 2016 - 2017
- Merit Scholarship (3 times), Sun Yat-sen University 2011 - 2014
- Excellent Leadership in Student Union, Sun Yat-sen University 2014
- Volunteer in Environmental Protection Association, Guangzhou, China 2011 - 2012