JUNCHUAN FAN

Phone: (319) 535-0631
Email: jcfan@umd.edu
Website: terpconnect.umd.edu/~jcfan

1124 Lefrak Hall
College Park, MD 20740

EDUCATION

Ph.D **University of Iowa**, Geographic Information Science (*2017*)
Dissertation: "Modeling space-time activities and places for a smart environment -- a semantic approach"
Advisor: Dr. Kathleen Stewart
Committee: Kathleen Stewart (co-chair), David Bennett (co-chair), Mark Armstrong, James Tamerius, ShihLung Shaw, Caglar Koylu

M.S. **University of Iowa**, Computer Science (*2015*)
Emphasis in data mining

M.S. **Graduate School of Chinese Academy Science (IRSA)**, Geographic Information System and Cartography (*2010)*
Thesis: "A web-based expert system for remote sensing image interpretation of earthquake hazard"
Advisor: Dr. Yalan Liu

B.E. **Wuhan University**, Geomatic Engineering (*2007*)
Graduated Top 5%
Minored in Project Management
Major GPA: 3.9/4.0

CURRENT POSITION

Post-doctoral Associate at Center for Geospatial Information Science, University of Maryland

HONORS AND AWARDS

CGRER (Center for Global & Regional Environmental Research) Graduate student presentation award, University of Iowa (*2015, 2016*)

Graduate Student Travel Grant , University of Iowa (*2015, 2016*)

Best Paper Award, Best student paper in International Symposium on Spatiotemporal Computing (*2015*)

Certificate for Outstanding Public Service through SPEC , University of Iowa (*2011*)

National Scholarship for Outstanding Academic Performance ,Wuhan University(*2007*)
Top 3% undergraduate students from the University

Research Experience

Postdoc associate, Center for Geospatial Information Science
University of Maryland, College Park, *2017- Present*

- Project manager and lead researcher on *Analyzing traveller's Response to Different Active Traffic Management Technologies*
  - *Designed and developed method to collect data about events that impact driver behavior*
  - *Lead a graduate student in developing vehicle trajectory analytic module*
  - *Designed and tested spatiotemporal model of driver behavior changes with respect to geospatial events*
- Project manager and lead researcher on *Improved Vehicle Miles Traveled (VMT) Estimation on Non Federal-Aid System Roadways*
  - *Lead a graduate student on developing parallel algorithm on Apache Spark cluster to process millions of vehicle trajectories*
  - *Write monthly project report*

Faculty research associate, Center for Geospatial Information Science
University of Maryland, College Park, *2016-2017*

- Researcher on pilot project that *Tracking Emerging Drugs from Social Media data*
  - *Developed python module to collect, process and visualize geo-tagged tweets that are related with drug use*

Graduate research assistant, Department of Geography
University of Iowa, Iowa City, *2014-2015, 2010-2012*

- Researcher on *Understanding Unintended Acceleration from Naturalistic Driving Trajectories (2014-2015)*
  - *Worked with National Advanced Driving Simulation Center to design and develop geospatial ontology model for naturalistic parking behavior*
  - *Developed an analytical module that transforms geometric trajectory data into semantic behavior*
- Developer on *Geospatial Semantic Region Discounting Based on Image (2011-2012)*
  - *Designed and built geospatial semantic ontology model for geographic entities in images*
  - *Developed semantic reasoning program in Java to infer most likely landcover type of an image based on ontology model*
  - *Developed Java program to conduct human subject test of the model*
- Developer on *Campus Facilities Flood Vulnerability Mapping and*

Analysis (2010-2011)

- *Developed a web-based spatial decision support system to help university facility management office plan building evacuation during flood*

Graduate research assistant, Institute of Remote Sensing Application *Chinese Academy of Science*, Beijing, China ,*2008-2010*

- *Designed and built a spatial database of satellite image samples for earthquake hazard using Oracle Spatial*
- *Developed a prototype web-based expert knowledge database management system for earthquake hazard interpretation*

TEACHING EXPERIENCE

University of Maryland, College Park
Instructor, Advanced GIS and Spatial Analysis (GEOG473), *Spring 2018*

- Senior undergraduate course with 50 students, covering the following topics: spatial database, point analysis, line analysis,surface analysis, and network analysis
- Developed course material, labs, homeworks and exams
- Coordinated grading and labs with two teaching assistants

University of Maryland, College Park
Instructor, Processing Geospatial Data Using Open Source Tools (GEOG788O), *Winter 2018*

- Graduate students courses with 10 students, covering the following topics:PostGIS, QGIS, GeoServer,Web Mapping API
- Developed course material, labs, homeworks and projects

University of Maryland, College Park
Guest Lecture, Introduction to Geodatabase (GEOG373), *Spring 2016*

- Guest lecture on GeoSPARQL and linked data query

University of Iowa, Iowa City
Teaching Assistant, Foundation of GIS (GEOG1050), *Fall 2012, Spring 2013*

- Instructed two lab sessions with 45 students in total
- Graded labs and homeworks

PUBLICATIONS

Fan, J., Fu, C., Stewart, K., Zhang, L., Using Big GPS Trajectory Data Analytics for Vehicle Miles Traveled Estimation. *Transportation Research Part C: Emerging Technologies.* (Under Revision)

Nasri, A., Zhang, L., **Fan, J.,** Stewart, K., Younes, H., Fu, C., & Jessberger, S. Advanced Vehicle Miles Traveled (VMT) Estimation methods for Non Federal-Aid System (NFAS) Roadways Using GPS Vehicle Trajectory Data and Statistical power Analysis. *Transportation Research Record*. (Under

Revision)

Xiong, C., Zhang, L., Stewart, K., **Fan, J**., Lee, M., and Zhou, W. ,2018. Analyzing Travelers' Response to Different Active Traffic Management (ATM) Technologies (Report No. SP709B4K). *Retrieved from https://www.roads.maryland.gov/OPR_Research/MD-18_SHA-UM-4-40_ATM_Report.pdf*

Stewart, K. and **Fan, J.**, 2018. Geospatial Analysis of Residential Parking Behaviors Using a Semantic Modeling Approach. *Travel Behaviour and Society*,9-20.

Fan, J. and Stewart, K., 2018. Modeling Mobility and Dynamics of Scheduled Space-time Activities –An RDF Approach. In: S. Shaw and D.Z. Sui, eds. *Human Dynamics Research in Smart and Connected Communities*. Springer, Cham, 81–105.

Fan, J. and Stewart, K., 2016. Modeling and reasoning about geospatial event dynamics using semantic web technologies. *In Workshop on Spatial Data on the Web*, *9th International Conference on Geographic Information Science.*

Fan, J. and Stewart, K., 2015. Detecting Spatial Patterns of Natural Hazards from the Wikipedia Knowledge Base. *ISPRS Annuals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Volume II-4/W2, 2015

- ***Winner of the best paper award***

Fan, J. and Stewart, K., 2014. An Ontology-based Framework for Modeling Movement on a Smart Campus. *In Workshop on Analysis of Movement Data*, *8th International Conference on Geographic Information Science.*

Hubbard, S., Stewart, K., and **Fan, J**., 2014. Modeling spatiotemporal patterns of building vulnerability and content evacuations before a riverine flood disaster. *Applied Geography*, 52, 172–181.

Stewart, K., **Fan, J.**, and White, E., 2013. Thinking about Space-Time Connections: Spatiotemporal Scheduling of Individual Activities. *Transactions in GIS*, 791–807.

Stewart, K., **Fan, J.**, 2012. Spatiotemporal Event Diffusion: A Formal Model and Framework (Position Paper). NCGIA Specialist Meeting on Mapping Ideas.

Fan, J. and Liu, Y., 2011. Construction of Expert system of earthquake damage recognition based on ASP.NET. Microcomputer Information, 27(1),78-87.

Fan, J., Liu, Y., Ren, Y., and Hu, L., 2009. Interpretation Feature Database Design for Typical Objects Based on Remote Sensing Images after Wenchuan Earthquake. *In: ACRS:Asian Conference of Remote Sensing.*

Ren, Y.H., Liu, Y.L., **Fan, J.C.**, Xu, H., and Yi, L., 2009. A study on land cover classification based on HJ-1 CCD image. *In: Geoscience and Remote Sensing Symposium, 2009 IEEE International, IGARSS 2009.*

Zhou, X., Zhang, B., Lei, L., Liu, L., Chen, Z., **Fan, J.**, and Liu, H., 2009. Variation of albedo with the increased impervious surface in Beijing-Tianjin area of China. *In: Geoscience and Remote Sensing Symposium, 2009 IEEE International, IGARSS 2009.*

Presentations and Invited Talks

Fan,J., Stewart, K., Nov 2018, Understanding Human Mobility from Big Mobile Device Data . *GIS Day Lightning Talk, College Park, MD*

Fan, J., Ratcliff, W., Apr 2018, Doing Good with Data Science, A Case Study: Detecting Mines via Satellite Imagery. *2nd Meeting of INTOSAI Working Group on Big Data*. *Washington,D.C.*

Fan,J., Fu,C., Stewart, K., Apr 2018, Understanding Spatial Interactions from Estimated VMT using Big GPS Trajectory Data . *American Association of Geographers Annual Meeting*. *New Orleans, LA*

Fan,J.,Stewart, K.,Fu,C., Apr 2018, Innovations in Geospatial Science: Understanding Human Mobility and More. *Maryland Transportation Institute Launch,Annapolis,MD*

Stewart, K.,Fan,J., Fu,C., Mar 2018, Big Data GPS Trajectory Analysis for Travel Activity Modeling. *Department Colloquium, University of Colorado,Boulder,CO*

Fan,J., Fu,C., Stewart, K., Nov 2017, VMT -- Reconstruct Vehicle Trajectories from Big GPS Waypoints Data . *Center for Geospatial Information Science Inauguration, College Park, MD*

Fan,J., Stewart,K., Sep 2016, Modeling and Reasoning about Geospatial Event Dynamics Using Semantic Web Technologies. *Workshop on Spatial Data on the Web, 9th International Conference on Geographic Information Science. Montreal, Canada*

Fan,J., Stewart,K., Apr 2016, Integrating semantic web technique and social media data for modeling activities and movements on a campus. *American Association of Geographers Annual Meeting. San Francisco, CA*

Fan,J., Stewart,K., Jul 2015,Detecting Spatiotemporal Dynamics from the Wikipedia Knowledge Base. *International Symposium on Spatiotemporal Computing. Fairfax, VA*

Fan,J., Stewart,K., Apr 2015,Semantic Data Modeling for Movement on a Smart Campus. *American Association of Geographers Annual Meeting. Chicago, Illinois*

Fan,J., Stewart,K., Nov 2013,Space-time Scheduling for a Smart Campus. *Department Colloquium, Iowa City, IA*

PROFESSIONAL AFFILIATIONS

American Association of Geographers, *2012-Present*

Chinese Overseas Transportation Association, *2017-Present*

PROFESSIONAL SERVICE

Peer-Reviewed Articles for:

- Applied Geography
- GIScience Conference
- Science of Surveying and Mapping (Chinese)

Geospatial Data Scientist Volunteer for Datakind, *2017-2018*

- Colloborate with data engineers from Google, Foursquare and develop algorithms to generate spatial features for deep learning model that is trained to detect illicit mining sites in Congo from Landsat8 images

Academic Translation, *2016- Present*

- Help China National Knowledge Infrastructure (CNKI) review and translate Chinese academic articles in GIScience domain

COMMUNITY SERVICE

Volunteer Tax Assistant, University of Iowa, *2011*

- Help new international students prepare tax return

Volunteer English Teacher, Beijing, *2009*

- Teach English classes for children of migrant workers

COMPUTER SKILLS

Programming language: Python (proficient), R, Scala, Java, JavaScript, Lisp , C#, VB

Data Analytic Platform: Apache Spark, Pig

Database: PostgreSQL/PostGIS, Oracle Spatial, Microsoft SQL Server, MongoDB,Neo4J, GraphDB

Web Development: OpenLayer API, Google Map API, Leaflet , Mapbox API,

Python/Django, HTML/CSS

LANGUAGES **Chinese (Mandarin)**: Native
English: Fluent