Jieqiong Zhao

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Research Interests Visual analytics, information visualization, applied artificial intelligence and machine learning, human-computer interaction, human computation and crowdsourcing

Education

Purdue University, West Lafayette, IN
Ph.D. Candidate in Electrical and Computer Engineering Jun 2013 - May 2020 (Expected)
- Advisor: David S. Ebert
- Thesis : Visual analytics for decision making in performance evaluation

Tufts University, Medford, MA
M.S. of Computer Science Sep 2011 - May 2013
- Advisor: Remco Chang
- Project: Modeling user interactions for complex visual search tasks

Zhejiang University of Technology, Hangzhou, China
M.S. Candidate in Computer Science and Technology Sep 2010 - Jun 2011
Bachelor of Engineering in Software Engineering Sep 2006 - Jun 2010
- Advisor: Xujia Qin
- Thesis: Natural scene construction and rendering of rain and snow

Honors and Awards

Honorable Mention for Compelling Narrative Debrief of VAST Challenge, IEEE	2015
Excellent Graduate awarded by Zhejiang Provincial Higher Education Council	May 2010
Excellent Student Scholarship awarded by Zhejiang University of Technology	2007, 2008 and 2009
Outstanding Student awarded Zhejiang University of Technology	Nov 2008

Journal Publications

1. **J. Zhao**, M. Karimzadeh, L. S. Snyder, C. Surakitbanharn, Z. C. Qian, and D. S. Ebert. MetricsVis: A visual analytics system for evaluating employee performance in public safety agencies. *IEEE Transactions on Visualization and Computer Graphics*, to appear 2020. doi: 10.1109/TVCG.2019.2934603
2. M. Khayat, M. Karimzadeh, **J. Zhao**, and D. S. Ebert. VASSL: A visual analytics toolkit for social spambot labeling. *IEEE Transactions on Visualization and Computer Graphics*, to appear 2020. doi: 10.1109/TVCG.2019.2934266
3. L. Tay, V. Ng, A. Malik, J. Zhang, J. Chae, D. S. Ebert, Y. Ding, **J. Zhao**, and M. Kern. Big data visualizations in organizational science. *Organizational Research Methods*, 21(3):660–688, 2018. doi: 10.1177/1094428117720014
4. Y. L. Wong, **J. Zhao**, and N. Elmqvist. Evaluating social navigation visualization in online geographic maps. *International Journal of Human–Computer Interaction*, 31(2):118–127, 2015. doi: 10.1080/10447318.2014.959106
5. S. Ko, **J. Zhao**, J. Xia, S. Afzal, X. Wang, G. Abram, N. Elmqvist, L. Kne, D. Van Riper, K. Gaither, S. Kennedy, W. Tolone, W. Ribarsky, and D. S. Ebert. Vasa: Interactive computational steering of large asynchronous simulation pipelines for societal infrastructure. *IEEE Transactions on Visualization and Computer Graphics*, 20(12):1853–1862, Dec 2014. doi: 10.1109/TVCG.2014.2346911
6. E. T. Brown, A. Ottley, **H. Zhao**, Q. Lin, R. Souvenir, A. Endert, and R. Chang. Finding waldo: Learning about users from their interactions. *IEEE Transactions on Visualization and Computer Graphics*, 20(12):1663–1672, Dec 2014. doi: 10.1109/TVCG.2014.2346575

Conference Publications

1. **J. Zhao**, M. Karimzadeh, H. Xu, A. Malik, S. Afzal, G. Wang, N. Elmqvist, and D. S. Ebert. Route Packing: Geospatially-accurate visualization of route networks. In *Proceedings of the 53rd Hawaii International Conference on System Sciences*, to appear 2020. arxiv.org/pdf/1909.10173.pdf
2. **J. Zhao**, M. Karimzadeh, A. Masjedi, T. Wang, X. Zhang, M. M. Crawford, and D. S. Ebert. FeatureExplorer: Interactive feature selection and exploration of regression models for hyperspectral images. In *IEEE VIS 2019 Short Papers*, to appear 2019. arxiv.org/pdf/1908.00671.pdf
3. A. Masjedi, **J. Zhao**, A. M. Thompson, K. Yang, J. E. Flatt, M. M. Crawford, D. S. Ebert, M. R. Tuinstra, G. Hammer, and S. Chapman. Sorghum biomass prediction using UAV-based remote sensing data and crop model simulation. In *IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium*, pp. 7719–7722, July 2018. doi: 10.1109/IGARSS.2018.8519034
4. Z. Zhang, A. Masjedi, **J. Zhao**, and M. M. Crawford. Prediction of sorghum biomass based on image based features derived from time series of UAV images. In *IGARSS 2017 - 2017 IEEE International Geoscience and Remote Sensing Symposium*, pp. 6154–6157, July 2017. doi: 10.1109/IGARSS.2017.8128413
5. **J. Zhao**, A. Malik, H. Xu, G. Wang, J. Zhang, C. Surakitbanharn, and D. S. Ebert. MetricsVis: A visual analytics framework for performance evaluation of law enforcement officers. In *2017 IEEE International Symposium on Technologies for Homeland Security (HST)*, pp. 1–7, April 2017. doi: 10.1109/THS.2017.7943468
6. S. K. Badam, **J. Zhao**, S. Sen, N. Elmqvist, and D. Ebert. TimeFork: Interactive prediction of time series. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, CHI '16, pp. 5409–5420. ACM, 2016. doi: 10.1145/2858036.2858150

Posters

1. W. Hatton, **J. Zhao**, M. B. Gorantla, J. Chae, B. Ahlbrand, H. Xu, S. Chen, G. Wang, J. Zhang, A. Malik, S. Ko, and D. S. Ebert. Visual analytics for detecting communication patterns. In *2015 IEEE Conference on Visual Analytics Science and Technology (VAST)*, **VAST Challenge MC2 Honorable Mention**, pp. 137–138, Oct 2015. doi: 10.1109/VAST.2015.7347648
2. **J. Zhao**, G. Wang, J. Chae, Hanye Xu, Siqaio Chen, W. Hatton, S. Towers, M. B. Gorantla, B. Ahlbrand, Jiawei Zhang, A. Malik, S. Ko, and D. S. Ebert. ParkAnalyzer: Characterizing the movement patterns of visitors VAST 2015 mini-challenge 1. In *2015 IEEE Conference on Visual Analytics Science and Technology (VAST)*, pp. 179–180, Oct 2015. doi: 10.1109/VAST.2015.7347669
3. J. Chae, G. Wang, B. Ahlbrand, M. B. Gorantla, J. Zhang, S. Chen, H. Xu, **J. Zhao**, W. Hatton, A. Malik, S. Ko, and D. S. Ebert. Visual analytics of heterogeneous data for criminal event analysis VAST challenge 2015: Grand challenge. In *2015 IEEE Conference on Visual Analytics Science and Technology (VAST)*, pp. 149–150, Oct 2015. doi: 10.1109/VAST.2015.7347654
4. S. K. Badam, **J. Zhao**, N. Elmqvist, and D. S. Ebert. TimeFork: Mixed-initiative time-series prediction. In *2014 IEEE Conference on Visual Analytics Science and Technology (VAST)*, pp. 223–224, Oct 2014. doi: 10.1109/VAST.2014.7042501
5. J. Xia, **J. Zhao**, I. Sheeley, J. Christopher, Q. Wang, C. Guo, J. Zhang, D. S. Ebert, Y. V. Chen, and Z. C. Qian. AnnotatedTimeTree: Visualization and annotation of news text and other heterogeneous document collections. In *2014 IEEE Conference on Visual Analytics Science and Technology (VAST)*, pp. 337–338, Oct 2014. doi: 10.1109/VAST.2014.7042554
6. C. Guo, J. Xia, J. Yu, **J. Zhao**, J. Zhang, Q. Wang, Z. C. Qian, Y. V. Chen, C. Wang, and D. Ebert. AnnotatedTimeTree, Dodeca-Rings Map & SMART: A geo-temporal analysis of criminal events. In *2014 IEEE Conference on Visual Analytics Science and Technology (VAST)*, pp. 303–304, Oct 2014. doi: 10.1109/VAST.2014.7042538
7. **J. Zhao**, Q. Lin, A. Ottley, and R. Chang. Modeling user interactions for complex visual search tasks. In *2013 IEEE Conference on Visual Analytics Science and Technology (VAST)*, Oct 2013

Research Experience

Purdue University VACCINE Lab

Graduate Research Assistant with Prof. David S. Ebert

FeatureExplorer: Interactive Feature Selection and Exploration of Regression Models for Hyperspectral Images Aug 2016 - Present

- Utilized hyperspectral images to predict the biomass of sorghum varieties
- Improved the performance of prediction based on a visual analytics framework that supports interactive feature selection of different machine learning models
- Integrated multiple feature ranking algorithms and visual representations to expedite identification of key subset of features

MetricsVis: Performance Evaluation and Analysis for Law Enforcement Officers Jun 2015 - Present

- Developed a visual analytics framework to support effective organizational performance evaluation
- Collaborated with law enforcement officers to identify requirements for performance evaluation
- Designed visual representations to support the exploration of performance at and between multiple levels of the organizational hierarchies

Route Packing: Position-Accurate Visualization of Geographic Route Networks Jan 2015 - Dec 2015

- Designed novel visualization technique for displaying position-accurate routes on geographic maps while preserving identity and directionality of individual routes
- Applied linear kernel density estimation and thinning algorithm to extract the skeleton of route network and adopted metro-line crossing minimization algorithm to reduce visual clutter
- Conducted a crowdsourced user study to investigate route tracing performance with road networks visualized using the route packing technique

VASA: Interactive computational steering of large asynchronous simulation pipelines for societal infrastructure June 2013 - Dec 2014

- Developed a visual analytics framework to support asynchronous simulation pipeline of severe weather, critical infrastructure, and supply chain
- Integrated high precision distributed simulation models and coarse local approximations

Tufts University

Master Project with Prof. Remco Chang

Modeling User Interactions for Complex Visual Search Tasks Sep 2011 - May 2013

- Performed an online user study to collect users' mouse interactions during searching task
- Extracted interaction features using n-grams and then classified users' searching strategies by decision trees and SVM

Teaching Experience

Teaching Assistant for Purdue's Introduction to Visual Analytics Fall 2018

- Prepared paper reading list for popular topics in visual analytics
- Advised students on course projects; graded paper summaries, course project papers and peer reviews, and exams

Teaching Assistant for Tufts's Introduction to Programming for Business Spring 2012

- Monitored labs for Visual Basic NET framework application, VBA Macro for EXCEL
- Prepared tutorials for labs and assignments; graded codes and exams

PROFESSIONAL SERVICES & VOLUNTEER

Conference Reviewer

IEEE Transactions on Visualization and Computer Graphics (IEEE VIS)
The Eurographics Conference on Visualization (EuroVis)
The IEEE Pacific Visualization Symposium (PacificVis)

Student Volunteer

IEEE VIS 2019 Student Volunteer