Jieqiong Zhao

Jieqiong.Zhao@asu.edu +1-857-221-2012
Tempe, AZ https://jieqiongzhao.github.io

Education

2013-2020	**Ph.D.** in Electrical and Computer Engineering Advisor: David S. Ebert Thesis title: Visual analytics for decision making in performance evaluation	Purdue University, West Lafayette, IN, USA
2011-2013	**M.S.** in Computer Science Master project: Modeling user interactions for complex visual search tasks	Tufts University, Medford, MA, USA
2010-2011	**M.S. Candidate** in Computer Science & Technology	Zhejiang University of Technology, China
2006-2010	**Bachelor of Engineering** in Software Engineering Thesis title: Natural scene construction and rendering of rain and snow	

Honors and Awards

2020	Award for Effectively Transforming Task Decomposition into Conceptual Design of VAST Challenge, IEEE
2015	Honorable Mention for Compelling Narrative Debrief of VAST Challenge, IEEE
2010	Excellent Graduate awarded by Zhejiang Provincial Higher Education Council
2007, 2008, 2009	Excellent Student Scholarship awarded by Zhejiang University of Technology
2008	Outstanding Student awarded Zhejiang University of Technology

Research Experience

Arizona State University VADER Lab
Postdoc Research Associate with Dr. Ross Maciejewski 2020-present

2022-2023	**Exploring the potential of explainable artificial intelligence in repairing trust** Examining the effectiveness of visual explainable AI in repairing trust in a high-throughput, high-stakes, and AI-enabled human-AI teaming environment following a trust violation Relevant publications : W3
2021-2023	**Using visual Analytics to aid in the detection of transition regions in molecular dynamics simulations** Utilizing data-reduction and progressive visualization techniques for responsive exploration and identification of critical transition regions in large-scale molecular dynamics simulations Relevant publications : W2
2021-2022	**Quantifying the benefits of human interactions in an interactive label correction system** Measuring the upper bound of human involvement in a human-machine teaming system such as label cleaning to improve the quality of a training dataset Relevant publications : W1
2020-2021	**Evaluating the impact of uncertainty visualizations on humans' reliance on predictive models** Investigating the presence of estimated uncertainty of a prediction provided by an artificial intelligence or machine learning model can enhance or undermine human adoption behavior of model predictions Relevant publications : J8

Purdue University VACCINE Lab
Graduate Research Assistant with Dr. David S. Ebert 2013-2020

2016-2020	**FeatureExplorer: Visual analytics for automated sorghum phenotyping and trait development** Visualizing the remote sensing data collected by a UAV-based platform. Incorporating the feature engineering pipeline of remote sensing experts to improve the prediction for phenotypic traits of energy crops. Relevant publications : C5, C4, C3
2015-2020	**MetricsVis: Employee performance evaluation and analysis for law enforcement officers** Collaborating with local law enforcement officers to exploit their automatically logged activity records. Utilizing dynamic evaluation metrics to understand the impact of behavior types, shifts, and patrol districts. Relevant publications : J6, J4, C2

2014-2015 **Route Packing: Geospatially-accurate visualization of route networks**
Displaying several routes simultaneously on a geographic map while preserving the geospatial layout, identity, directionality, and volume of individual routes.
Relevant publication : C6

2013-2014 **VASA: Interactive computational steering of large asynchronous simulation pipelines for infrastructure**
Designing a workbench connected with several distributed servers that model the impact of societal threats such as weather, food contamination, and traffic on critical infrastructure such as supply chains, road networks, and power grids. Relevant publication : J2

Tufts University VALT Lab
Master Project with Dr. Remco Chang 2011-2013

2011-2013 **Modeling user interactions for complex visual search tasks**
Investigating the interaction patterns of users while performing search tasks. Utilized *Where's Waldo* as a representative example of visual complex search tasks. Relevant publications : J1, P1

Teaching Experience

Summer 2021	Mentor for five high school students in the seven-week VADER Lab summer research camp
2018, 2019, 2020	Graduate Mentor for three students who received scholarships from Purdue's Discovery Park Undergraduate Research Internship (DURI) Program
Fall 2018	Teaching Assistant for Purdue's Introduction to Visual Analytics ECE695D
2014, 2016, 2017	Graduate Mentor for three students in the Summer Undergraduate Research Fellowship (SURF) internship
2015-2020	Graduate Mentor for eleven undergraduate students participating in the Vertically Integrated Projects (VIP)
Spring 2012	Teaching Assistant for Tufts's Introduction to Programming for Business COMP10

Publications

Journal Papers (peer-reviewed)

J8. **J. Zhao**, Y. Wang, M. V. Mancenido, E. K. Chiou, and R. Maciejewski. Evaluating the impact of uncertainty visualization on model reliance. *IEEE Transactions on Visualization and Computer Graphics*, pp. 1–15, 2023. doi : 10.1109/TVCG.2023.3251950

J7. A. Reinert, L. S. Snyder, **J. Zhao**, A. S. Fox, D. F. Hougen, C. Nicholson, and D. S. Ebert. Visual analytics for decision-making during pandemics. *Computing in Science Engineering*, 22(6):48–59, Nov 2020. doi : 10.1109/MCSE.2020.3023288

J6. **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*, 26(1):1193–1203, Jan 2020. doi : 10.1109/TVCG.2019.2934603

J5. 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*, 26(1):874–883, Jan 2020. doi : 10.1109/TVCG.2019.2934266

J4. 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

J3. 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, Feb 2015. doi : 10.1080/10447318.2014.959106

J2. 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

J1. 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 Papers (peer-reviewed)

C7. L. Snyder, **J. Zhao**, A. Reinert, G. Wang, and D. Ebert. PanViz 2.0 : Intregating AI into visual analytics to adapt to the novel challenges of COVID-19. In *Proceedings of the Hawaii International Conference on System Sciences*, pp. 1457–1465. ScholarSpace, Jan. 2021. doi : 10.24251/HICSS.2021.176

C6. **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 Hawaii International Conference on System Sciences*, HICSS-53, pp. 1370–1379. ScholarSpace, Jan. 2020. doi : 10.24251/HICSS.2020.168

C5. **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 *Proceedings of the IEEE Visualization Conference*, VIS 2019, pp. 161–165. IEEE, Oct 2019. doi : 10.1109/VISUAL.2019.8933619

C4. 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 *Proceedings of the IEEE International Geoscience and Remote Sensing Symposium*, IGARSS 2018, pp. 7719–7722. IEEE, July 2018. doi : 10.1109/IGARSS.2018.8519034

C3. 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 *Proceedings of the IEEE International Geoscience and Remote Sensing Symposium*, IGARSS 2017, pp. 6154–6157. IEEE, July 2017. doi : 10.1109/IGARSS.2017.8128413

C2. **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 *Proceedings of the IEEE International Symposium on Technologies for Homeland Security*, HST 2017, pp. 1–7. IEEE, April 2017. doi : 10.1109/THS.2017.7943468

C1. S. K. Badam, **J. Zhao**, S. Sen, N. Elmqvist, and D. Ebert. TimeFork: Interactive prediction of time series. In *Proceedings of the ACM Conference on Human Factors in Computing Systems*, CHI '16, pp. 5409–5420. ACM, 2016. doi : 10.1145/2858036.2858150

Posters (peer-reviewed)

P9. C. Guo, **J. Zhao**, L. Ding, T. Zhang, W. Deng, P. Owusu Attah, X. Guo, X. T. Nguyen, Y. Ju, Z. C. Qian, and Y. V. Chen. Constellation-Builder : A high-level situational awareness and team assembly interface for cybersecurity events. In *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*. IEEE, Oct 2020 VAST Challenge 2020 MC3 Award ★

P8. 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 *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*, pp. 137–138. IEEE, Oct 2015. doi : 10.1109/VAST.2015.7347648 VAST Challenge 2015 MC2 Honorable Mention ★

P7. **J. Zhao**, G. Wang, J. Chae, H. Xu, S. Chen, W. Hatton, S. Towers, M. B. Gorantla, B. Ahlbrand, J. Zhang, A. Malik, S. Ko, and D. S. Ebert. ParkAnalyzer: Characterizing the movement patterns of visitors VAST 2015 mini-challenge 1. In *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*, pp. 179–180. IEEE, Oct 2015. doi : 10.1109/VAST.2015.7347669

P6. 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 *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*, pp. 149–150. IEEE, Oct 2015. doi : 10.1109/VAST.2015.7347654

P5. S. K. Badam, **J. Zhao**, N. Elmqvist, and D. S. Ebert. TimeFork: Mixed-initiative time-series prediction. In *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*, pp. 223–224. IEEE, Oct 2014. doi : 10.1109/VAST.2014.7042501

P4. J. Zhang, S. Afzal, D. Breunig, J. Xia, **J. Zhao**, I. Sheeley, J. Christopher, D. S. Ebert, C. Guo, S. Xu, J. Yu, Q. Wang, C. Wang, Z. Qian, and Y. Chen. Real-time identification and monitoring of abnormal events based on microblog and emergency call data using SMART. In *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*, pp. 393–394. IEEE, Oct 2014. doi : 10.1109/VAST.2014.7042582

P3. 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 *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*, pp. 337–338. IEEE, Oct 2014. doi : 10.1109/VAST.2014.7042554

P2. 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 *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*, pp. 303–304. IEEE, Oct 2014. doi : 10.1109/VAST.2014.7042538

P1. **J. Zhao**, Q. Lin, A. Ottley, and R. Chang. Modeling user interactions for complex visual search tasks. In *Proceedings of the IEEE Conference on Visual Analytics Science and Technology*. IEEE, Oct 2013

Book Chapter

B1. M. Karimzadeh, **J. Zhao**, G. Wang, L. S. Snyder, and D. S. Ebert. Human-guided visual analytics for big data. In *Big Data in Psychological Research*, pp. 145–177. American Psychological Association, Washington, DC, USA, Jan 2020. doi : 10.1037/0000193-008

Working Papers

W4. Y. Ma, **J. Zhao**, F. Lei, Y. Wang, M. V. Mancenido, E. K. Chiou, and R. Maciejewski. Trust and visualization. Edting

W3. Y. Wang, **J. Zhao**, M. V. Mancenido, E. K. Chiou, and R. Maciejewski. Could visual XAI repair trust? a study on the impact of visual explanations for trust repair in high-stakes AI-enabled task environments. Drafting

W2. R. Hnatyshyn, **J. Zhao**, D. Perez, , J. Ahrens, and R. Maciejewski. Molsieve : A progressive visual analytics system for molecular dynamics simulations. Submitted to IEEE VIS 2023 Conference

W1. Y. Wang, **J. Zhao**, R. Askin, and R. Maciejewski. A simulation-based approach for quantifying human benefits in interactive label correction. Submitted to IEEE Transactions on Visualization and Computer Graphics (under major revision)

Professional Services

Journal Reviewer

Computer Graphics Forum
IEEE Computer Graphics and Applications
Applied Ergonomics
IEEE Transactions on Systems, Man and Cybernetics : Systems
Visual Informatics

Conference Reviewer

The IEEE Conference on Visualization & Visual Analytics (IEEE VIS 2021, 2022)
The IEEE Conference on Visual Analytics Science and Technology (IEEE VAST 2018, 2019, 2020)
The Eurographics Conference on Visualization (EuroVis 2019)
The IEEE Pacific Visualization Symposium (PacificVis 2020, 2021, 2023)
Hawaii International Conference on System Sciences (HICSS-53, 54, 55)

Conference

Program Committee for the Visualization Notes Track of PacificVis 2023
IEEE VIS 2022 Session Chair
IEEE VIS 2019 Student Volunteer