

Zekun Wu

[EMAIL](#)

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EDUCATION

Saarland University

Ph.D. in Computer Science

Saarbrücken, Saarland, Germany

Feb. 2023 – Present

Washington University in St. Louis

Master of Science in Data Analytics and Statistics

St. Louis, MO, USA

Sep. 2019 – May 2021

Beihang University

Master of Science in Control Science and Engineering

Beijing, China

Sep. 2016 – Jan. 2019

Nanjing University of Aeronautics and Astronautics

Bachelor of Engineering in Mechanical Engineering and Automation

Nanjing, Jiangsu, China

Sep. 2008 – July 2012

PUBLICATIONS

1. **Z. Wu** and A. Feit (2024). Understanding and Predicting Temporal Visual Attention Influenced by Dynamic Highlights in Monitoring Task. *IEEE Transactions on Human-Machine Systems (IHMS, Under Review)*.
2. **Z. Wu**, Y. Wang, M. Langer and A. Feit (2025). ReLEYEance: Gaze-based assessment of users' AI-reliance at run-time. *ACM Symposium on Eye Tracking Research and Application (ETRA 2025, Accepted)*.
3. **Z. Wu** and A. Feit (2024). Enhancing Saliency Prediction in Monitoring Tasks: The Role of Visual Highlights. *ACM Symposium on Eye Tracking Research and Application (ETRA 2024)*. [\[details\]](#)
4. A. Das*, **Z. Wu***, I. Škrjanec, and A. Feit (2023). Shifting Focus with HCEye: Exploring the Dynamics of Visual Highlighting and Cognitive Load on User Attention and Saliency Prediction. *ACM Symposium on Eye Tracking Research and Application (ETRA 2024)*. [\[details\]](#)
5. **Z. Wu**, S. Doroudian, A. Lu (2023). What User Behaviors Make the Differences During the Process of Visual Analytics? *arXiv preprint arXiv:2311.00690*. [\[details\]](#)
6. S. Doroudian, **Z. Wu**, A. Galati, W. Wang, and A. Lu (2021). A Study of Real-time Information and Immersive Maps on User Behaviors during Search and Rescue (SAR) Training of Firefighters. *IEEE VR 2022 Workshop on 3D Content Creation for Simulation Training (TrainingXR)*. [\[details\]](#)
7. K. Wu and **Z. Wu** (2020). A Human-Centered Risk Model for Construction Safety. *IEEE Access*. [\[details\]](#)
8. **Z. Wu**, P. Xin, X. Zhao, and Y. Jiang (2019). The Task Demands-Resources Method: A New Approach to Human Reliability Analysis from a Psychological Perspective. *Quality and Reliability Engineering International*. [\[details\]](#)
9. X. Pan and **Z. Wu** (2018). Performance Shaping Factors in Human Error Probability Modification of Human Reliability Analysis. *International Journal of Occupational Safety and Ergonomics*. [\[details\]](#)
10. **Z. Wu**, X. Pan, and X. Chen (2017). Relation of Motivation Intensity, Stress Level, and Human Performance: A Human Reliability Experiment. *Proceedings of the 11th Asian Control Conference (ASCC 2017)*, Gold Coast, 2017. [\[details\]](#)
11. **Z. Wu**, X. Pan, H. Wang, and J. Chen (2017). Influence of Work Motivation and Task Difficulty on Human Reliability. *Proceedings of the 2nd International Conference on Reliability Systems Engineering (ICRSE 2017)*, Beijing, 2017. [\[details\]](#)

PROJECTS

- Examining AI Prompt Design for Influencing User Beliefs** Jan 2024 – Present
- Designed an experimental framework exploring how subtle changes in AI-generated content—such as information richness and expressed confidence—can reshape human beliefs in both factual and subjective domains.
 - Developed a predictive model to quantify and anticipate shifts in user attitudes, revealing insights into effective AI communication strategies for influencing user decisions.
- Temporal Saliency Analysis with Visual Highlighting** Feb 2023 – Present
- Developed a multiple drone monitoring interface prototype, examining the effects of visual highlighting on user gaze behavior.
 - Collected a gaze dataset to document variations in user gaze patterns influenced by visual highlights, facilitating detailed user behavior analysis and interface optimization.
 - Employed deep-learning-based saliency models to predict user fixation patterns, aiding in the comprehension of user-interactive interface effectiveness.
- Future of Firefighting and Career Training** Sep 2021 – Feb 2023
- Handled data collection and analysis in an immersive virtual reality simulation system, focusing on firefighting search and rescue scenarios.
 - Developed a model to estimate user stress levels using a stacked-LSTM layer neural network.
- Human-Machine System Simulation based on Probabilistic Safety Analysis** Jul 2017 – Jan 2019
- Conducted field research at the Wenchang Spacecraft Launch Site, defining research objectives and formulating a research plan centered on monitoring the fueling process during spacecraft launches.
 - Conducted a literature review to understand the applications of probabilistic graphical models and human reliability models in spacecraft launch monitoring.
 - Completed a graduate thesis on monitoring tasks during spacecraft fueling processes using Bayesian Network approaches.
- Human Reliability Analyses based on Cognitive Motivation Model** Sep 2016 – Jan 2019
- Conducted a simulation to understand the effects of motivation intensity on human performance using artificial neural networks.
 - Led a team to design and implement a simulated experiment on the aircraft approaching process.
 - Performed statistical analyses to assess different factors influencing human performance, using methods such as ANOVA, regression analysis, and data smoothing with curve fitting.

EXPERIENCE

- Researcher, E6 Project (CPEC Group)** Feb. 2023 – Present
Saarland University *Saarbrücken, Saarland, Germany*
- Led research on the impact of visual highlighting in monitoring interfaces; devised and executed multi-drone scenario simulations to analyze user gaze data with advanced saliency models.
 - Engaged in international research collaborations, enriching the project's depth and scope; actively contributed to collaborative meetings and knowledge exchange sessions.
 - Organized seminars, facilitated student discussions on emerging models, and supervised master students.
- Graduate Research Assistant** Sep. 2021 – Feb. 2023
UNC Charlotte *Charlotte, NC, USA*
- Designed and implemented a firefighter search and rescue experiment utilizing a VR system, focusing on realistic simulation and data accumulation.
 - Managed the collection, processing, and modeling of data generated from the VR experiment, paving the way for more immersive training experiences.
- Assistant in Instruction** Jan. 2020 – May. 2021
Washington University in St. Louis *St. Louis, MO, USA*
- Conducted 8 comprehensive seminar lectures on R programming, facilitating learning for 50+ undergraduate students.

- Offered office hours to review material, address questions, and assist students with assignments, enhancing their understanding and performance.
- Tasked with the development and grading of assignments, quizzes, and exams, ensuring accurate evaluation of student understanding and progress.

Graduate Research Assistant

Sep. 2016 – Mar. 2019

Beihang University

Beijing, China

- Completed Master's research focuses on human reliability analysis during the fueling process of spacecraft launch activities.
- Designed a substantial simulation program for rocket propellant fueling operations
- Led the development and publications, contributing valuable insights to the field.

Junior Maintenance Engineer

Jul. 2012 – Jun. 2015

SF Airlines

Shenzhen, Guangdong, China

- Crafted compliance bulletins for frontline engineers, interpreting manufacturers' maintenance manuals with accurate translations and documentation.
- Offered technical support to maintenance technicians, aiding in diagnosing, troubleshooting, and documenting issues associated with aircraft engines.

SKILLS AND COMPETENCIES

Programming Languages: Python (pytorch, scikit-learn, numpy, pandas), Java, SQL, JavaScript, HTML/CSS, R

Large Language Model Tools: OpenAI API, LangChain, Hugging Face Transformers

Software: SPSS, SAS

Developer Tools: Git, VS Code, Visual Studio, PyCharm, Eclipse

Mathematics: Estimation and Detection Theory, Matrix Theory, Numerical Analysis, Optimization, Probability and Stochastic Process