

Weizhi Li

Email: weizhi0908@gmail.com

Phone: +1-9795713612

Homepage: <https://wayne0908.github.io/>

Google Scholar: <https://scholar.google.com/citations?user=QXhFzzwAAAAJ>

Research Summary

I develop AI integration designs that enable reliable, robust, and data-efficient intelligent systems for high-stakes applications. My research leverages statistical validity, adaptive learning, and intelligent data acquisition to build learning, prediction, and decision-making systems for evolving and heterogeneous conditions. My methods have been applied to planetary science tasks, studies of Alzheimer's disease and amyotrophic lateral sclerosis (ALS), and omics-based cancer prognosis.

Research Interests

Reliable and robust machine learning; statistical inference; active learning and experimental design; AI for science and healthcare.

Education

- **Arizona State University**, Tempe, USA Aug '18 – Aug '22
Ph.D., Computer Engineering
Dissertation: *"Modeling and Exploiting the Structure of Data via Meta-Features for Robust and Efficient Machine Learning"*
Advisors: Dr. Visar Berisha and Dr. Gautam Dasarathy
- **Texas A&M University**, College Station, USA Aug '15 – Dec '17
M.S., Electrical Engineering
Thesis: *"Noise-Tolerant Deep Learning for Histological Image Segmentation"*
Advisors: Dr. Jim Ji and Dr. Xiaoning Qian
- **Shandong University**, Weihai, China Sep '11 – Jun '15
B.S., Electronic Information Science and Technology
Outstanding undergraduate thesis: *"Influences of Two Image Dehazing Filters on Image Compression Algorithms"*

Employment

- **The University of Tennessee Health Science Center** Jul '25 – Present
Postdoctoral Researcher, Department of Genetics, Genomics and Informatics
Research focus: *Heterogeneous Modeling for Omics-Based Prediction Under Data Disparities*
- **Los Alamos National Laboratory** Mar '24 – Apr '25
Postdoctoral Researcher, Statistical Sciences Group
Research focus: *AI for Robust Standoff Material Characterization with Applications to Planetary Exploration*
- **Arizona State University** Jan '23 – Feb '24
Postdoctoral Researcher, College of Health Solutions
Research focus: *Sample-Efficient and Statistically Valid Experimental Design in Clinical Studies*
- **Meta**
Research Scientist Sep '22 – Jan '23
Machine Learning Engineer Intern, Ads Machine Learning Team May – Aug '21

Refereed Conference Publications

1. **Li, Weizhi**, Gautam Dasarathy, and Visar Berisha. “Matched-Pair Experimental Design with Active Learning.” In *Uncertainty in Artificial Intelligence (UAI)*, 2026.
2. Dolin, Pavel, **Weizhi Li**, Gautam Dasarathy, and Visar Berisha. “Statistically Valid Post-Deployment Monitoring Should Be Standard for AI-Based Digital Health.” In *Advances in Neural Information Processing Systems (NeurIPS)*, 2025.
3. **Li, Weizhi**, Visar Berisha, and Gautam Dasarathy. “Advanced Tutorial: Label-Efficient Two-Sample Tests.” In *Winter Simulation Conference (WSC)*, 2024.
4. Zahin, Abrar, **Weizhi Li**, and Gautam Dasarathy. “Rapid Change Localization in Dynamic Graphical Models.” In *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2024.
5. **Li, Weizhi**, Gautam Dasarathy, Karthikeyan Natesan Ramamurthy, and Visar Berisha. “A Label Efficient Two-Sample Test.” In *Uncertainty in Artificial Intelligence (UAI)*, 2022.
6. **Li, Weizhi**, Gautam Dasarathy, Karthikeyan Natesan Ramamurthy, and Visar Berisha. “Finding the Homology of Decision Boundaries with Active Learning.” In *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.
7. **Li, Weizhi**, Gautam Dasarathy, and Visar Berisha. “Regularization via Structural Label Smoothing.” In *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2020.
8. **Li, Weizhi**, Xiaoning Qian, and Jim Ji. “Noise-Tolerant Deep Learning for Histopathological Image Segmentation.” In *IEEE International Conference on Image Processing (ICIP)*, 2017.

Refereed Journal Publications

9. Hinds, Mark, Michael Geyer, **Weizhi Li**, Elizabeth Sklute, Debarati Das, Ronald K. Martinez, Allison Zastrow, et al. “A Comparative Study of Multimodal Data Fusion Strategies for Planetary Spectroscopy.” *Spectrochimica Acta Part B: Atomic Spectroscopy* 243 (2026): 107556.
10. **Li, Weizhi**, Natalie Klein, Brendan Gifford, Elizabeth Sklute, Carey Legett, and Samuel M. Clegg. “Regularization via f-Divergence: An Application to Multi-Oxide Spectroscopic Analysis.” *Journal of Geophysical Research: Machine Learning and Computation* 3 (2026): e2025JH000990.
11. **Li, Weizhi**, Prad Kadambi, Pouria Saidi, Karthikeyan Natesan Ramamurthy, Gautam Dasarathy, and Visar Berisha. “Active Sequential Two-Sample Testing.” *Transactions on Machine Learning Research* (2024).
12. Tsai, Chung-Chi, **Weizhi Li**, Kuang-Jui Hsu, Xiaoning Qian, and Yen-Yu Lin. “Image Co-Saliency Detection and Co-Segmentation via Progressive Joint Optimization.” *IEEE Transactions on Image Processing* 28, no. 1 (2018): 56–71.
13. Wang, Liping, Xiao Zhou, Chengyou Wang, and **Weizhi Li**. “The Effects of Image Dehazing Methods Using Dehazing Contrast-Enhancement Filters on Image Compression.” *KSI Transactions on Internet and Information Systems (TIIS)* 10, no. 7 (2016): 3245–3271.

Abstracts

14. **Li, Weizhi**, Debarati Das, Elizabeth Sklute, Carey Legett, Natalie Klein, and Samuel M. Clegg. “Multi-Oxide Analysis Through the Fusion of LIBS and VISIR Spectroscopic Data.” *LPI Contributions* 3090 (2025): 1349.
15. Das, Debarati, Ronald K. Martinez, Carey Legett, Elizabeth Sklute, Samuel M. Clegg, A. Ziemann, U. Wolf, and **Weizhi Li**. “Building and Characterizing a VISIR Reflectance Library and Spectral Database at Los Alamos National Laboratory.” *LPI Contributions* 3090 (2025): 2095.
16. Hinds, Mark, **Weizhi Li**, et al. “Explainable Deep Learning for Laser Induced Breakdown Spectroscopy.” *Conference on Data Analysis (CoDA)*, 2025 (**Honorable Mention**).

17. **Li, Weizhi**, Natalie Klein, and Samuel M. Clegg. “Enhancing Neural Network Generalizability with f-Divergence Regularization for Multi-Oxide Spectroscopic Analysis.” *AGU Fall Meeting Abstracts*, vol. 2024, abstract V13F-04, 2024 (**Oral presentation**).

Working Papers

18. **Li, Weizhi**, and Yan Cui. “Context Construction, Not Model Optimization: In-Context Learning for Ancestry-Imbalanced Omics Prediction.” Submitted to *AAAI* 2027.
19. **Li, Weizhi**, and Yan Cui. “Beyond Discrete Ancestry Groups: Distribution-Aware In-Context Learning for Cancer Outcome Prediction Across the Genetic Ancestry Continuum.” Submitted to *BIBM* 2026.

Software

20. Klein, Natalie, and **Weizhi Li**. “NNFDivergence.” *US Department of Energy (DOE) Software* (2025): 149.

Grant Proposals

- NIH R01 (NLM), submitted in 2026. “In-Context Learning for Robust Omics-Based Disease Prediction Across the Genetic Ancestry Continuum.” PI: Yan Cui, UTHSC. Role: Contributed to developing the specific aims and writing the proposal.
- NIH R01 (NCI) R01CA262296 (renewal), submitted in 2026. “Algorithm-Based Prevention and Reduction of Differences in Cancer Outcomes Arising from Data Imbalance.” PI: Yan Cui, UTHSC. Role: Contributed to developing the specific aims and writing the proposal.

Talks and Presentations

Invited Talks

- *Statistics Seminar*, Department of Mathematics & Statistics, University of New Mexico Mar ’25
Topic: Label-Efficient Two-Sample Tests
- *Winter Simulation Conference*, Orlando, Florida (advanced tutorial) Dec ’24
Topic: Label-Efficient Two-Sample Tests
Note: Delivered a 90-minute, classroom-style tutorial on label-efficient two-sample testing for researchers and practitioners.
- *Applied Machine Learning Summer School*, Los Alamos National Laboratory Jul ’24
Topic: AI-Enhanced Exploration for Planetary Science
Note: Delivered a summer school lecture for graduate students using machine-learning applications from ongoing laboratory projects; led live coding exercises and supervised team projects culminating in a midterm report.
- *AI4OPT and AI4Science Reading Group*, Los Alamos National Laboratory Apr ’24
Topic: Physics-Based Bayesian Optimization (discussion leader)
- *LIONS Seminar Series*, Arizona State University Sep ’23
Topic: Designing Two-Sample Tests with Local Information
- *Journal Club on Responsible Use of Machine Learning Research*, ECEE Department, Arizona State University Sep ’22
Topic: Leakage and the Reproducibility Crisis in ML-Based Science

Conference Presentations

- Poster presentation: *Conference on Uncertainty in Artificial Intelligence (UAI)*, Virtual Aug ’26
Topic: Matched-Pair Experimental Design with Active Learning

- Presentation: *International Workshop on Artificial Intelligence for Precision Medicine (AI4PM)*, UTHSC, Memphis, TN Mar '26
Topic: Addressing Data Imbalance with In-Context Learning via Enhanced-Context
- Poster presentation: *Conference on Data Analysis (CoDA)*, Santa Fe, NM Feb '25
Topic: Regularization via f-Divergence: An Application to Multi-Oxide Spectroscopic Analysis
- Oral presentation: *American Geophysical Union (AGU)*, Washington, D.C. Dec '24
Topic: Enhancing Neural Network Generalizability with f-Divergence Regularization for Multi-Oxide Spectroscopic Analysis
- Poster presentation: *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA Oct '22
Topic: Finding the Homology of Decision Boundaries with Active Learning
- Poster presentation: *Conference on Uncertainty in Artificial Intelligence (UAI)*, Virtual Aug '22
Topic: A Label Efficient Two-Sample Test
- Poster presentation: *Conference on Neural Information Processing Systems (NeurIPS)*, Virtual Dec '20
Topic: Finding the Homology of Decision Boundaries with Active Learning
- Poster presentation: *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Virtual Aug '20
Topic: Regularization via Structural Label Smoothing
- Poster presentation: *International Conference on Image Processing (ICIP)*, Beijing, China Sep '17
Topic: Noise-Tolerant Deep Learning for Histopathological Image Segmentation
- Poster presentation: *SWE Region C Conference Poster Competition*, College Station, TX Mar '17
Topic: Noise-Tolerant Deep Learning for Histopathological Image Segmentation

Mentoring

- **Robert Lattus**, undergraduate researcher, Arizona State University 2022
Role: Served as mentor for his Honors College thesis, "*Characterizing the Performance of Machine Learning Algorithms: A Study and Novel Techniques.*"
Current position: Ph.D. student, University of Florida
- **Mark Hinds**, master's student researcher, Los Alamos National Laboratory 2024–2025
Role: Supervised a project on AI for space exploration.
Outcomes: Honorable Mention at the 2025 Conference on Data Analysis (CoDA); a first-author paper in *Spectrochimica Acta Part B: Atomic Spectroscopy*.
Current position: post-master's researcher, Los Alamos National Laboratory

Honors and Awards

- NeurIPS Top Reviewer Award Oct '25
- UAI Student Scholarship Jun '22
- Graduate Travel Award from Arizona State University (Remote) Aug '20
- Engineering Graduate Fellowship from Arizona State University '18, '19
- Poster Award in SWE Region C Conference Poster Competition Mar '17
- Graduate Merit Scholarship from Texas A&M University Aug '16
- Shandong University Departmental Scholarship Oct '14

Professional Activities

Reviewing

- Journal Reviewer: *IEEE Transactions on Information Theory*, *IEEE Transactions on Artificial Intelligence*, *Journal of Combinatorial Optimization* and *Transactions on Machine Learning Research*
- Conference Reviewer: NeurIPS, ICML, ICLR, UAI, AISTATS, IJCAI, and AAAI

Additional Activities

- Mentor for the DataFest hackathon, Arizona State University Mar '23
- Student panelist at the Ph.D. open house, School of Computing and Augmented Intelligence, Arizona State University Feb '22
- Graduate Fulton Ambassador, Arizona State University May – Nov '20
- Medical Imaging Summer School: Medical Imaging Meets Machine Learning Aug '16