Zhimin Li

Visualization, XAI, HPC

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Education

2024 **PhD, Computer Science**, *University of Utah*.
Advisor: Valerio Pascucci

2015 **Bachelor of Computer Science**, *University of Utah*.
Thesis: "G-MAP: A High Dimension Data Grand Tour Map"

2015 **Bachelor of Applied Math**, *University of Utah*.

Research Experience

University of Vanderbilt

Sep,2024 – present ***Postdoctoral researcher***.
Study implicit neural field for large-scale data management and analysis.

University of Utah

2017 – 2024 ***Research Assistant***.
My research focus encompasses the fields of visualization, explainable AI, and high-performance computing. I am interested in designing novel data visualization techniques to assist researchers from various scientific domains in studying large datasets and complex computation models.

Lawrence Livermore National Laboratory

May 2023 ***Apply Lossy Compression in Generative Model Training***.
Aug 2023 Apply state-of-art lossy compression technique, ZFP on generative model training for scientific simulation. The main goal is to reduce the size of training data (e.g. 3.5TB->20GB) without affecting the performance of the generative model.

May,2018,2019 ***Visualize, Model and Predict Silent Error Propagation***.
Aug,2018,2019 Apply visualization, machine learning, and data mining techniques to understand the impact of silent data corruption in high-performance computation. Design efficient data analysis parallel solution to analyze large unstructured datasets.

May 2016 – Aug 2016 ***High Dimensional Data Visualization and Analysis***.
Apply dimension reduction, clustering, and statistical approaches to understand the complex high dimensional data. Design an interactive visualization system to help researchers to explore high-dimensional data.

Publications

Journal Articles

2024 **Zhimin, Li**, Shusen Liu, Xin Yu, Kailkhura Bhavya, Jie Cao, Diffenderfer James Daniel, Peer-Timo Bremer, and Valerio Pascucci. "understanding robustness lottery": A geometric comparative visual analysis of neural network pruning approaches. ***IEEE Transactions on Visualization and Computer Graphics***, 2024.

2024 Shusen. Liu, Haichao. Miao, **Zhimin, Li**, M. Olson, V. Pascucci, and P-T. Bremer. Ava: Towards autonomous visualization agents through visual perception-driven decision-making. ***Computer Graphics Forum***, volume 43, page e15093, 2024.

2022 **Zhimin, Li**, Harshitha Menon, Kathryn Mohror, Shusen Liu, Luanzheng Guo, Peer-Timo Bremer, and Valerio Pascucci. A visual comparison of silent error propagation. ***IEEE Transactions on Visualization and Computer Graphics***, volume 30, pages 3268–3282, 2022.

2021 **Zhimin, Li**, Harshitha Menon, Dan Maljovec, Yarden Livnat, Shusen Liu, Kathryn Mohror, Peer-Timo Bremer, and Valerio Pascucci. Spotsdc: Revealing the silent data corruption propagation in high-performance computing systems. ***IEEE Transactions on Visualization and Computer Graphics***, volume 27, pages 3938–3952, 2021.

2019 Shusen Liu, **Zhimin, Li**, Tao Li, Vivek Srikumar, Valerio Pascucci, and Peer-Timo Bremer. Nlize: A perturbation-driven visual interrogation tool for analyzing and interpreting natural language inference models. ***IEEE Transactions on Visualization and Computer Graphics***, volume 25, pages 651–660, 2019.

Conference Proceedings

2021 **Zhimin, Li**, Harshitha Menon, Kathryn Mohror, Peer-Timo Bremer, Yarden Livant, and Valerio Pascucci. Understanding a program's resiliency through error propagation. In ***Proceedings of the 26th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming***, PPoPP '21, page 362–373, New York, NY, USA, 2021. Association for Computing Machinery.

2018 Shusen Liu, Tao Li, **Zhimin, Li**, Vivek Srikumar, Valerio Pascucci, and Peer-Timo Bremer. Visual interrogation of attention-based models for natural language inference and machine comprehension. In ***Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing: System Demonstrations***, pages 36–41, 2018.

2016 **Zhimin, Li**, Shusen Liu, and Valerio Pascucci. Grand-map: A high dimensional grand tour map. In *UROP, University of Utah*, 2016.

Preprint

2024 **Zhimin, Li**, Haichao Miao, Xinyuan Yan, Valeri Pascucci, Matthew Berger, and Shusen Liu. See or recall: A sanity check for the role of vision in solving visualization understanding tasks with multimodal llms. *(**Europe Vis Under Submission**)*, 2024.

2024 **Zhimin, Li**, Haichao Miao, Valerio Pascucci, and Shusen Liu. Visualization literacy of multimodal large language models: A comparative study. *arXiv preprint arXiv:2407.10996*, 2024.

2024 **Zhimin, Li**, Harshitha Menon, Charles Fredrick Jekel, Peter Lindstrom, and Valerio Pascucci. Data reduction for generative surrogate model training. *(**In Preparation**)*, 2024.

2023 **Zhimin, Li**, Shusen Liu, Kailkhura Bhavya, Timo Bremer, and Valerio Pascucci. Instance-wise linearization of neural network for model interpretation. *arXiv preprint arXiv:2310.16295*, 2023.

Workshop and Poster

2018 **Zhimin, Li**, Harshitha Menon, Kathryn Mohror, Yarden Livant, and Valerio Pascucci. an information visualization system to analyze silent data corruption. In *The International Conference for High Performance Computing, Networking, Storage, and Analysis*, SC ' poster, 2018.

2016 **Zhimin, Li** and Alexander Lex. Why and when do students change majors? In *IEEE VIS*, demo, 2016.

Scholarships & Awards

2023 NSDF SC23 Travel Award

2022 IEEE E-science 18th Conference 2022 traveling scholarship

2015 KLW Artificial/Machine Learning scholarship

2015 C.M. Collins Endowed Scholarship

Computer skills

Programming Languages	Python, PyTorch, C, C++, JAVA
Web Technologies	HTML 5, CSS, D3.js, Javascript
Database	MySQL

Position of Responsibility

2025	**ISAV Program Committee**.
2021-2025	**IEEE VIS Reviewer**.
2023-2024	**IEEE Pacific VIS Conference Track Reviewer**.
2024-2025	**IEEE Pacific VIS TVCG Journal Track Reviewer**.
2025	**SC Reviewer**.
2020	**IEEE VIS Volunteer**.
2014	**ACM SIGMOD/PODS 2014 Volunteer**.
2014	**Member of Pi Mu Epsilon**, *Honorary national mathematics society*.

Teaching Assistantship

Fall, 2018:	**CS6962 Programming For Engineer**, University of Utah.
Fall, 2017:	**CS6962 Programming For Engineer**, University of Utah.
Spring, 2016:	**CS4150 Algorithm**, University of Utah.
Fall, 2015:	**CS3100 Models Of Computation**, University of Utah.

References

Dr. Valerio Pascucci
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Center for Applied Scientific Computing
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Dr. Harshitha Menon
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Dr. Shusen Liu
Research Scientist
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