Shandian Zhe

zhe@cs.utah.edu (https://www.cs.utah.edu/~zhe/)

EDUCATION

- Ph.D., Computer Science, Purdue University, 2017
- Master of Science, Computer Science, Purdue University, 2017
- Master of Engineering, Computer Science and Technology, Chinese Academy of Sciences, 2011
- B.E. in Computer Science and Technology, Beihang University, China, 2007

APPOINTMENTS

- Assistant Professor, Kahlert School of Computing, University of Utah, 01/ 2018 – 06/2024
- Associate Professor, Kahlert School of Computing, University of Utah, 07/2024 - present

RESEARCH AREA

- Probabilistic Learning
- Bayesian Statistics
- Data Science
- Complex-Structured Data Analysis

ADVISING

- Ph.D. Students:
    - Zhimeng Pan (graduated, now at Pinterest)
    - Zheng Wang (graduated, now at Meta)
    - Conor Tillinghast (Math department, graduated, now at Recursion)
    - Shibo Li (graduated, *Tenure-Track Assistant Professor at CS@Florida State University*)
    - Shikai Fang (graduated, Senior Researcher at Microsoft Research Asia)
    - Xin Yu (graduated, Lawrence Livermore National Laboratory)
    - Zhitong Xu (1st year)
    - Da Long (3rd year)
    - Yile Li (2nd year)
    - Keyan Chen (2nd year)
    - Daniel Johnson (1st year)
    - Jia Cai (2nd year)
    - Matthew Lowery (1st year, co-advised with Varun Shashank)
    - Qiwei Yuan (4th year)
    - Madison Cooley (5th year, co-advised with Mike Kirby)
    - Tushar Gautum (3rd year, co-advised with Mike Kirby)
    - Zak Bastiani (1st year, co-advised with Mike Kirby)

- Master student:
    - Yulan Wang (graduated, now at Google),
    - Yishuai Du (graduated, now at Cainiao Network)

    - Caleb Johnson (graduated)
    - Dillon Harold Lee (graduated)
    - Su-wei Yang
    - Neil Whitaker
    - Adam Vogel
    - Nicola Wernecke
    - Gabrielius Kudirka
    - James Rider
- Undergraduate Student:
    - David L Randall (graduated, Sandia Lab),
    - Yimin Zheng (graduated)
    - Wenlin Li
    - Zhitong Liu
    - Haozhe Sun (visiting student)
- Postdoc: Wei Xing (co-advised with Mike Kirby, *now Lecturer at University of Sheffield*)

PUBLICATIONS (bolded: students advising by me, underline: students not advising by me, * equal contribution)

Since Joining University of Utah

Referred Journal papers

Year 2024

[1] **Da Long**, Nicole Mrvaljevic, Shandian Zhe, and Bamdad Hosseini, "A Kernel Approach for PDE Discovery and Operator Learning", In *Physcia D: Nonlinear Phenomena,* 2024.

[2] Lingyi Fu, Ryan D. Burns, Shandian Zhe, Yang Bai, "What Explains Adolescents' Physical Activity and Sports Participation During the COVID-19 Pandemic? – An Interpretable Machine Learning Approach", Journal of Sports Sciences, 2024, Vol 42, Issue 17.

[3] **Madison Cooley**, Varun Shankar, Mike Kirby, and Shandian Zhe, "Fourier PINNs: From Strong Boundary Conditions to Adaptive Fourier Bases", Transactions on Machine Learning Research (TMLR).

Year 2023

[4] Michael Penwarden, Shandian Zhe, Akil Narayan, and Robert M. Kirby, "A Metalearning Approach for Physics-Informed Neural Networks (PINNs): Application to Parameterized PDEs", *Journal of Computational Physics*, 2023.

[5] **Shikai Fang**, Shandian Zhe, Hui-Ming Lin, Arun A. Azad, Heidi Fettke, Edmond M Kwan, Lisa Horvath, Blossom Mak, Tiantian Zheng, Pan Du, Shidong Jia, Robert M. Kirby, Manish Kohli MD, "Multi-Omic Integration of Blood-Based Tumor Associated Genomic and Lipidomic Profiles Using Machine Learning Models in Metastatic Prostate Cancer", *JCO Clinical Cancer Informatics,* 2023.

[6] M. Penwarden, A.D. Jagtap, Shandian Zhe, G.E. Karnidakis and R.M. Kirby, "A Unified Scalable Framework For Causal Sweeping Strategies For Physics-Informed Neural Networks (PINNs) and Their Temporal Decompositions", *Journal of Computational Physics*, 2023.

[7] Hongsup Oh, Roman Amici, Geoffrey Bomarito, Shandian Zhe, Robert M. Kirby and Jacob Hochhalter, "Inherently Interpretable Machine Learning Solutions to Differential Equations*", Engineering with Computers,* 2023.

Year 2022

[8] **Zheng Wang**, Shandian Zhe, Joshua Zimmerman, Candice Morrissey, Joseph E. Tonna, Vikas Sharma, and Ryan Metcalf, "Development and Validation of a Machine Learning Method to Predict Intraoperative Red Blood Cell Transfusions in Cardiothoracic Surgery", *Nature Scientific Reports, 2022.*

[9] Michael Penwarden, Shandian Zhe, Akil Narayan, and Robert M. Kirby, "Multifidelity Modeling for Physics-Informed Neural Networks (PINNs)", *Journal of Computational Physics, Vol 451, 2022.*

Year 2021

[10] Wei Xing, Robert M. Kirby, and Shandian Zhe, "Deep Coregionalization for the Emulation of Simulation-Based Spatial-Temporal Fields", *Journal of Computational Physics, Vol 428, 2021.*

[11] Yuan Yun, Zhao Zhang, Xianfeng Terry Yang, and Shandian Zhe, "Macroscopic traffic flow modeling with physics regularized Gaussian process: A new insight into machine learning applications in transportation.", *Transportation Research Part B: Methodological 146 (2021): 88-110.*

[12] Wei Xing, Akeel A. Shah, Peng Wang, Shandian Zhe, Qian Fu, and Robert. M. Kirby, "Residual Gaussian process: A tractable nonparametric Bayesian emulator for multi-fidelity simulations", *Applied Mathematical Modelling, Vol. 97, pages 36-56, 2021.*

[13] Jinmian Ye, Guangxi Li, Di Chen, Haiqin Yang, Shandian Zhe, and Zenglin Xu, "Block-term tensor neural networks", *Neural Networks*, Vol. 130, 2020.

Year 2018

[14] Liang Lan, Zhuang Wang, Shandian Zhe, Wei Cheng, and Kai Zhang, "Scaling up Kernel SVM on Limited Resources: A Low-rank Linearization Approach", *IEEE Transactions on Neural Networks and Learning Systems (TNNLS), 2018.*

[15] Bin Liu, Zenglin Xu, Shandian Zhe, Haoli Bai, Zihan Wang, and Jennifer Neville, "Variational Random Function Model for Network Modeling", *IEEE Transactions on Neural Networks and Learning Systems (TNNLS), 2018.*

[16] Bin Liu, Lirong He, Yingming Li, Shandian Zhe, and Zenglin Xu, "Neuralcp: Bayesian multiway data analysis with neural tensor decomposition", *Cognitive Computation,* Vol 10, page 1051-1061, 2018.

Rigorously Reviewed Conference proceedings

Year 2025

[17] **Zhitong Xu**, Haitao Wang, Jeff M. Philips, Shandian Zhe, Liang Sun, "Standard Gaussian Process is All You Need for High-Dimensional Bayesian Optimization" (**oral presentation**), The International Conference on Learning Representations (ICLR), 2025.

[18] **Da Long, Zhitong Xu**, **Qiwei Yuan**, Yin Yang, and Shandian Zhe, "Invertible Fourier Neural Operators for Tackling Both Forward and Inverse Problems", The 28th International Conference on Artificial Intelligence and Statistics (AISTATS), 2025**.**

Year 2024

[19] **Shikai Fang**, Qingsong Wen, Yingtao Luo, Shandian Zhe, Liang Sun, "BayOTIDE: Bayesian Online Multivariate Time series Imputation with functional decomposition" (**spotlight presentation**), The 41st International Conference on Machine Learning (ICML), 2024.

[20] **Shikai Fang,** Xin Yu, Zheng Wang, Shibo Li, Rboert M. Kirby, and Shandian Zhe, "Functional Bayesian Tucker Decomposition for Continuous-indexed Tensor", The International Conference on Learning Representations (ICLR), 2024.

[21] **Shikai Fang***, **Madison Cooley***, **Da Long***, **Shibo Li**, Robert M. Kirby, and Shandian Zhe, "Solving High Frequency and Multi-Scale PDEs with Gaussian Processes", The International Conference on Learning Representations (ICLR), 2024.

[22] **Shibo Li**, **Xin Yu**, Wei W. Xing, Robert M. Kirby, Akil Narayan, and Shandian Zhe, "Multi-Resolution Active Learning of Fourier Neural Operators" (**oral presentation**), The 27th International Conference on Artificial Intelligence and Statistics (AISTATS), 2024.

[23] **Da Long**, Wei W. Xing, Aditi S. Krishnapriyan, Robert M. Kirby, Shandian Zhe, and Michael W. Mahoney, "Equation Discovery with Bayesian Spike-and-Slab Priors and Efficient Kernels", The 27th International Conference on Artificial Intelligence and Statistics (AISTATS), 2024.

[24] Yingjing Wu, Ahmed Elmokashfi, Foivos Michelinakis, Jacobus Van der Merwe, and Shandian Zhe, "ADDER: Service-Specific Adaptive Data-Driven Radio Resource Control for Cellular-IoT", IEEE 25th International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), 2024.

Year 2023

[25] **Zheng Wang**, **Shikai Fang, Shibo Li**, and Shandian Zhe, "Dynamic Tensor Decomposition via Neural Diffusion-Reaction Processes" (**spotlight presentation**), *The 37th Conference on Neural Information Processing Systems (NeurIPS)*, 2023.

[26] **Shikai Fang**, **Xin Yu, Shibo Li, Zheng Wang**, Robert M. Kirby, and Shandian Zhe, "Streaming Factor Trajectory Learning for Temporal Tensor Decomposition", *The 37th Conference on Neural Information Processing Systems (NeurIPS)*, 2023.

[27] **Shibo Li***, Michael Penwarden*, Yiming Xu, **Conor Tillinghast**, Akil Narayan, Robert Kirby, and Shandian Zhe, "Meta Learning of Interface Conditions for Multi-Domain Physics-Informed Neural Networks", *The 40th International Conference on Machine Learning (ICML)*, 2023.

[28] Yu Chen*, Wei Deng*, **Shikai Fang***, Fengpei Li*, Tianjiao Nicole Yang, Yikai Zhang, Kashif Rasul, Shandian Zhe, Anderson Schneider, and Yuriy Nevmyvaka, "Provably Convergent Schrodinger Bridge with Applications to Probabilistic Time Series Imputation", *The 40th International Conference on Machine Learning (ICML),* 2023.

[29] **Shibo Li**, **Zheng Wang**, Akil Narayan, Robert Kirby, and Shandian Zhe, "Meta-Learning with Adjoint Methods", *The 26th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2023.

[30] Junyang Cai, Khai-Nguyen Nguyen, Nishant Shrestha, Aidan Good, Ruisen Tu, **Xin Yu**, Shandian Zhe and Thiago Serra, "Getting away with more network pruning: From sparsity to geometry and linear regions", *The*

20th International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR), 2023.

Year 2022

[31] **Shibo Li**, **Zheng Wang**, Robert M. Kirby, and Shandian Zhe, "Infinite-Fidelity Coregionalization for Physical Simulation", *Thirty-Sixth Conference on Neural Information Processing Systems (NeurIPS), 2022.*

[32] **Shibo Li***, Jeff Phillips*, **Xin Yu**, Robert M. Kirby, and Shandian Zhe, "Batch Multi-Fidelity Active Learning with Budget Constraints", *Thirty-Sixth Conference on Neural Information Processing Systems (NeurIPS), 2022.*

[33] Aidan Good*, Jacky Lin*, **Xin Yu***, Hannah Sieg, Mikey Fergurson, Shandian Zhe, Jerzy Wieczorek, and Thiago Serra, "Recall Distortion in Neural Network Pruning and the Undecayed Pruning Algorithm", *Thirty-Sixth Conference on Neural Information Processing Systems (NeurIPS), 2022.*

[34] **Shikai Fang**, Akil Narayan, Robert M. Kirby, and Shandian Zhe, "Bayesian Continuous-Time Tucker Decomposition" (**Oral presentation**), *The 39th International Conference on Machine Learning (ICML), 2022*, Baltimore, Maryland.

[35] **Shibo Li**, Robert M. Kirby, and Shandian Zhe, "Decomposing Temporal High-Order Interactions via Latent ODEs", *The 39th International Conference on Machine Learning (ICML), 2022*, Baltimore, Maryland.

[36] **Da Long**, **Zheng Wang**, Aditi Krishnapriyan, Robert M. Kirby, Shandian Zhe, and Michael W. Mahoney, "AutoIP: A United Framework to Integrate Physics into Gaussian Processes", *The 39th International Conference on Machine Learning (ICML), 2022*, Baltimore, Maryland.

[37] **Zheng Wang**, and Shandian Zhe, "Nonparametric Factor Trajectory Learning for Dynamic Tensor Decomposition", *The 39th International Conference on Machine Learning (ICML), 2022*, Baltimore, Maryland.

[38] **Zheng Wang**, Yiming Xu, **Conor Tillinghast**, **Shibo Li**, Akil Narayan, and Shandian Zhe, "Nonparametric Embeddings of Sparse High-Order Interaction Events", *The 39th International Conference on Machine Learning (ICML), 2022*, Baltimore, Maryland.

[39] **Conor Tillinghast**, **Zheng Wang**, and Shandian Zhe, "Nonparametric Sparse Tensor Factorization with Hierarchical Gamma Processes", *The 39th International Conference on Machine Learning (ICML), 2022*, Baltimore, Maryland.

[40] **Xin Yu**, Thiago Serra, Srikumar Ramalingam, and Shandian Zhe, "The Combinatorial Brain Surgeon: Pruning Weights That Cancel One Another in Neural Networks", *The 39th International Conference on Machine Learning (ICML), 2022*, Baltimore, Maryland.

[41] **Zheng Wang**, Wei Xing, Robert M. Kirby, and Shandian Zhe, "Physics Informed Deep Kernel Learning", *The 25th International Conference on Artificial Intelligence and Statistics (AISTATS), 2022*.

[42] **Shibo Li**, **Zheng Wang**, Robert M. Kirby, and Shandian Zhe, "Deep Multi-Fidelity Active Learning of High-Dimensional Outputs", *The 25th International Conference on Artificial Intelligence and Statistics (AISTATS), 2022.*

Year 2021

[43] **Zhimeng Pan**, **Zheng Wang**, Jeff Phillips, and Shandian Zhe, "Self-Adaptable Point Processes with Nonparametric Time Decays", *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS)*, 2021.

[44] **Shibo Li**, Robert M. Kirby, and Shandian Zhe, "Batch Multi-Fidelity Bayesian Optimization with Deep Auto-Regressive Networks", *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS), 2021.*

[45] Aditi Krishnapriyan, Amir Gholami, Shandian Zhe, Robert M. Kirby, and Michael W. Mahoney, "Characterizing Possible Failure Modes in Physics-Informed Neural Networks", *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS), 2021.*

[46] **Conor Tillinghast** and Shandian Zhe, "Nonparametric Decomposition of Sparse Tensors", *The Thirty-eighth International Conference on Machine Learning (ICML), 2021.*

[47] **Shikai Fang, Zheng Wang**, **Zhimeng Pan,** Ji Liu, and Shandian Zhe, "Streaming Bayesian Deep Tensor Factorization", *The Thirty-eighth International Conference on Machine Learning (ICML), 2021.*

[48] **Shikai Fang,** Robert. M. Kirby, and Shandian Zhe, "Bayesian Streaming Sparse Tucker Decomposition", *The 37th Conference on Uncertainty in Artificial Intelligence (UAI), 2021.*

[49] **Zheng Wang,** Wei Xing, Robert M. Kirby, and Shandian Zhe, "Multi-Fidelity High-Order Gaussian Processes for Physical Simulation", *Proceedings of The 24th International Conference on Artificial Intelligence and Statistics (AISTATS), 2021.*

Year 2020

[50] **Shibo Li**, Wei Xing, Robert M. Kirby, and Shandian Zhe, "Multi-Fidelity Bayesian Optimization via Deep Neural Networks", *Proceedings of Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS), 2020.*

[51] **Zheng Wang,** Xinqi Chu, and Shandian Zhe, "Self-Modulating Nonparametric Event-Tensor Factorization", *Proceedings of Thirty-seventh International Conference on Machine Learning (ICML), 2020*.

[52] **Zhimeng Pan, Zheng Wang**, and Shandian Zhe, "Scalable Nonparametric Factorization for High-Order Interaction Events", *Proceedings of The 23rd International Conference on Artificial Intelligence and Statistics (AISTATS), 2020.*

[53] **Zhimeng Pan, Zheng Wang**, and Shandian Zhe, "Streaming Nonlinear Bayesian Tensor Decomposition", *Proceedings of The Conference on Uncertainty in Artificial Intelligence (UAI), 2020.*

[54] **Shibo Li,** Wei Xing, Robert M. Kirby and Shandian Zhe, "Scalable Gaussian Process Regression Networks", *Proceedings of International Joint Conference on Artificial Intelligence-Pacific Rim International Conference on Artificial Intelligence (IJCAI-PRICAI), 2020.*

[55] **Shikai Fang**, Shandian Zhe, Kuang-chih Lee, Kai Zhang, and Jennifer Neville, "Online Bayesian Sparse Learning with Spike and Slab Priors", *Proceedings of The IEEE International Conference on Data Mining (ICDM)*, *2020.*

[56] **Conor Tillinghast, Shikai Fang**, Kai Zheng, and Shandian Zhe, "Probabilistic Neural-Kernel Tensor Decomposition", *Proceedings of The IEEE International Conference on Data Mining (ICDM)*, *2020.*

[57] Wei Xing, Shireen Elhabian, Robert M Kirby, Ross T Whitaker, and Shandian Zhe, "Infinite ShapeOdds: Nonparametric Bayesian Models for Shape Representations", *Proceedings of The 34th AAAI Conference on Artificial Intelligence (AAAI), 2020.*

[58] **Zheng Wang**, Shandian Zhe, Joseph Tonna, Vikas Sharma and Ryan Metcalf, "Predicting Intraoperative Blood Utilization in Cardiothoracic Surgery with Machine Learning", Advancing Transfusion and Cellular Therapies Worldwide (AABB) Annual Meeting, 2020.

Year 2019

[59] **Zheng Wang**, and Shandian Zhe, "Conditional Expectation Propagation" (**oral presentation**), *Proceedings of the Conference on Uncertainty in Artificial Intelligence (UAI), 2019.*

[60] **Shandian Zhe**, Wei Xing, and Robert M. Kirby, "Scalable High-Order Gaussian Process Regression", *Proceedings of The 22nd International Conference on Artificial Intelligence and Statistics (AISTATS), 2019.*

Year 2018

[61] Shandian Zhe, and **Yishuai Du**. "Stochastic Nonparametric Event-Tensor Decomposition" (**spotlight presentation**), *Proceedings of Thirty-second Conference on Neural Information Processing Systems (NeurIPS), 2018.*

[62] **Yishuai Du**, **Yimin Zheng**, Kuang-chih Lee, and Shandian Zhe, "Probabilistic Streaming Tensor Decomposition" (**oral presentation**), *Proceedings of The IEEE International Conference on Data Mining (ICDM), 2018*.

[63] Ye Jinmian, Linnan Wang, Guangxi Li, Di Chen, Shandian Zhe, Xinqi Chu, and Zenglin Xu, "Learning Compact Recurrent Neural Networks with Block-Term Tensor Decomposition", *Proceedings of The Conference on Computer Vision and Pattern Recognition (CVPR), 2018.*

[64] Lianjie Cao, Sonia Fahmy, Puneet Sharma and Shandian Zhe, "Data-driven Resource Flexing for Network Functions Virtualization", *Proceedings of The Symposium on Architectures for Networking and Communications Systems, 2018.*

Workshop Papers

[65] **Shibo Li**, Li Shi, and Shandian Zhe. "Infinite-Fidelity Surrogate Learning via High-order Gaussian Processes", *The Synergy of Scientific and Machine Learning Modeling Workshop (SynS & ML) in ICML 2023*.

Papers In Submission

[1] **Keyan Chen, Yile Li, Da Long, Zhitong Xu,** Wei Xing, Jacob Hochhalter and Shandian Zhe, "Pseudo-Physics-Informed Neural Operators: Enhancing Operator Learning from Limited Data", *International Conference in Machine Learning (ICML), 2025,* in submission

[2] **Da Long, Zhitong Xu,** Guang Yang, Akil Narayan, and Shandian Zhe**, "**Arbitrarily-Conditioned Multi-Functional Diffusion for Multi-Physics Emulation"**,** *International Conference in Machine Learning (ICML), 2025,* in submission

[3] **Zhitong Xu, Da Long,** Yiming Xu, Guang Yang, Shandian Zhe, and Houman Owhadi**, "**Toward Efficient Kernel-Based Solvers for Nonlinear PDEs**",** *International Conference in Machine Learning (ICML), 2025,* in submission

[4] **Madison Cooley,** Robert M Kirby, Shandian Zhe, and Varun Shankar, "HyResPINNs: Adaptive Hybrid Residual Networks for Learning Optimal Combinations of Neural and RBF Components for Physics-Informed Modeling", *International Conference in Machine Learning (ICML), 2025,* in submission

[5] **Da Long,** Shandian Zhe, Samuel Williams, Leonid Oliker, and Zhe Bai, "Spatio-temporal Fourier Transformer (StFT) for Long-term Dynamics Prediction"**,** *International Conference in Machine Learning (ICML), 2025,* in submission

[6] **Matthew Lowery,** John Turnage, Zachary Morrow, John D Jakeman, Akil Narayan, Shandian Zhe, and Varun Shankar, "*Kernel Neural Operators (KNOs) for Scalable, Memory-efficient, Geometrically-flexible Operator Learning*", arXiv preprint arXiv:2407.00809, 2024

[7] **Zachary Bastiani**, Robert M Kirby, Jacob Hochhalter, Shandian Zhe, "Complexity-Aware Deep Symbolic Regression with Robust Risk-Seeking Policy Gradients", arXiv preprint arXiv:2406.06751, 2024

[8] **Madison Cooley**, Shandian Zhe, Robert M Kirby, Varun Shankar, "Polynomial-Augmented Neural Networks (PANNs) with Weak Orthogonality Constraints for Enhanced Function and PDE Approximation", SIAM Journal of Scientific Computing (SISC), in submission.

[9] Yutao Feng, Yintong Shang, Xiang Feng, Lei Lan, Shandian Zhe, Tianjia Shao, Hongzhi Wu, Kun Zhou, Hao Su, Chenfanfu Jiang, Yin Yang, "ElastoGen: 4D Generative Elastodynamics", Conference on Computer Vision and Pattern Recognition (CVPR), 2025, in submission

[10] **Tushar Gautam**, Nathan Crosby, Sara Restrepo-Velasquez, Juan D Ocampo, Harry Millwater, Jacob Hochhalter, Mike Kirby, and Shandian Zhe, *"Efficient Fatigue Modeling: Applying Operator Networks for Stress Intensity Factor Prediction and Analysis*"

Disclosures, Patents Issued, and Software Distributed

1. Patent

[1] Lee, Kuang-chih, and Shandian Zhe. "Method and system for recommending content items to a user based on tensor factorization." U.S. Patent No. 11,315,032. 26 Apr. 2022.

2. Software

[1] Wenlin Li, Shibo Li and Shandian Zhe, "Probability Surrogate Learning Library", Github: https://github.com/liwenlin664477/Probability-Surrogate-Learning, 2023

Major Media Exposure

My research work about using machine learning to predict blood transfusion for heart surgeries is featured in *TransfusionNews.com*, at
https://transfusionnews.com/2022/02/09/machine-learning-based-algorithm-to-predict-intraoperative-rbc-use-during-cardiothoracic-surgery/
which is a major news source in the area of blood transfusion.

Before Joining University of Utah (Year 2017 and before)

Referred Journal papers

[1] Hao Peng, Yifan Yang, Shandian Zhe, Jian Wang, Michael Gribskov and Yuan Qi, "DEIsoM: A Hierarchical Bayesian Model for Identifying Differentially Expressed Isoforms Using Biological Replicates", *Bioinformatics, Volume 13, Issue 19, Page 3018-3027, 2017.*

[2] Shandian Zhe, Syed A.Z. Naqvi, Yifan Yang and Yuan Qi, "Joint Network and Node Selection for Pathway-based Genomic Data Analysis", *Bioinformatics, Volume 29, Issue 16, Page 1987-1996, 2013.*

[3] Zenglin Xu, Shandian Zhe, Yuan Qi and Peng Yu, "Association Discovery and Diagnosis of Alzheimer's Disease with Bayesian Multiview Learning", *Journal of Artificial Intelligence Research, Volume 56, Page 247-268, 2016.*

Rigorously Reviewed Conference proceedings

[4] Hao Peng, Shandian Zhe, Xiao Zhang, and Yuan Qi, "Asynchronous Distributed Variational Gaussian Process for Regression", *Proceedings of the 34th International Conference on Machine Learning (ICML 2017).*

[5] Shandian Zhe, Kai Zhang, Pengyuan Wang, Kuang-chih Lee, Zenglin Xu, Yuan Qi and Zoubin Ghahramani, "Distributed Flexible Nonlinear Tensor Factorization", *Proceedings of the 30th Annual Conference on Neural Information Processing Systems (NIPS), 2016.*

[6] Kai Zhang, Shandian Zhe, Chaoran Cheng, Zhi Wei, Zhengzhang Chen, Haifeng Chen, Guofei Jiang, Yuan Qi and Jieping Ye, "Annealed Sparsity via Adaptive and Dynamic Shrinking", *Proceedings of the 22nd ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2016.*

[7] Shandian Zhe, Yuan Qi, Youngja Park, Zenglin Xu, Ian Molloy and Suresh Chari, "DinTucker: Scaling up Gaussian Process Models on Large Multidimensional Arrays", *Proceeding of the 30th AAAI Conference on Artificial Intelligence (AAAI), 2016.*

[8] Syed Abbas Z. Naqvi, Shandian Zhe, Yuan Qi, Yifan Yang and Jieping Ye, "Fast Laplace Approximation for Sparse Bayesian Spike and Slab Models", *Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI), 2016.*

[9] Shandian Zhe, Zenglin Xu, Xinqi Chu, Yuan Qi and Youngja Park, "Scalable Nonparametric Multiway Data Analysis", *Proceedings of the 18th International Conference on Artificial Intelligence and Statistics (AISTATS), 2015.*

[10] Shandian Zhe, Zenglin Xu, Yuan Qi and Peng Yu, "Sparse Bayesian Multiview Learning for Simultaneous Association Discovery and Diagnosis of Alzheimer's Disease", *Proceedings of the 29th AAAI Conference on Artificial Intelligence (AAAI), 2015.*

[11] Changying Du, Shandian Zhe, Fuzhen Zhuang, Yuan Qi, Qing He and Zhongzhi Shi, "Bayesian Maximum Margin PCA", *Proceedings of the 29th AAAI Conference on Artificial Intelligence (AAAI), 2015.*

[12] Shandian Zhe, Zenglin Xu, Yuan Qi and Peng Yu, "Joint Association Discovery and Diagnosis for Alzheimer's Disease by Supervised Heterogeneous Multiview Learning", *Proceedings of the 19th anniversary of Pacific Symposium on Biocomputing (PSB), 2014.*

Workshop Papers

[13] Bin Liu, Lirong He, Shandian Zhe, Yingming Li and Zenglin Xu, "DeepCP: Flexible Nonlinear Tensor Decomposition", *Proceedings of Workshop on Bayesian Deep Learning, Advances in Neural Information Pro- cessing Systems (NIPS), 2017.*

[14] Shandian Zhe, "Scalable Nonparametric Tensor Analysis", *Proceedings of the 21st AAAI/SIGAI Doctoral Consortium, 2017.*

[15] Shandian Zhe, "Regularized Variational Sparse Gaussian Processes", *Proceedings of Workshop on Advances in Approximate Bayesian Inference, Advances in Neural Information Processing Systems (NIPS)*, 2017.

[16] Shandian Zhe, Kuang-chih Lee, Kai Zhang and Jennifer Neville, "Online Spike-and-slab Inference with Stochastic Expectation Propagation", *Proceedings of Workshop on Advances in Approximate Bayesian Inference, Advances in Neural Information Processing Systems (NIPS), 2016.*

TALKS

1. "Scalable Bayesian Learning for Hidden Relationship Discovery", 03/2018, Department of Population Health Sciences, School of Medicine, University of Utah, UT.
2. "Probabilistic Streaming Tensor Decomposition", 10/2018, IEEE International Conference on Data Mining (ICDM), Singapore.
3. "Stochastic Nonparametric Event-Tensor Decomposition"', 12/2018, Annual Conference on Neural Information Processing Systems (NeurIPS), Canada.

4. “Machine Learning and Artificial Intelligence”, 02/2019, in Graduate Visit, UT.
5. “Scalable Nonparametric Tensor Decomposition"', 07/2019, Seattle AI lab, Kuai Inc., WA.
6. “Multi-Fidelity Nonlinear Coregionalization for Physical Simulations”, 07/2019, Machine Learning and Uncertainty Quantification (MLUQ) workshop, CA.
7. “Brief Introduction to Our Work”, 10/2019, In meeting with Sandia Lab, UT.
8. “Marriage of Physics and Machine Learning”, 02/2020, in meeting with Pacific Northwest National Laboratory, online.
9. “Multi-Fidelity Meta-Learning with Applications to PINNs"', 10/2020, MURI kick-off meeting, online.
10. “Deep Batch Multi-fidelity Hyperparameter Tuning and Task Specific Meta Learning”, 02/2021, MURI team seminar (Brown, Stanford, Caltech, and Utah), online.
11. “Designing and Optimizing Meta Learners of PINNs”, 08/2021, MURI Project review conference, online.
12. “Multi-fidelity Learning and Optimization for Physical Simulation and AutoML"', 09/2021, Utah Center for Data Science, UT.
13. “Brief Introduction of Our Work in Scientific Machine Learning”, 06/2022, In meeting with AFRL, UT.
14. “Multi-fidelity Bayesian Learning and Optimization for Physical Simulation and Its Applications”, 07/2022, International Conference on Physics and its Applications (Physics-2022), online.
15. “Infinite-Fidelity Coregionalization for Physical Simulation”, 07/2022, MURI team seminar (Brown, Stanford, Caltech, and Utah), online.
16. “Meta-learning and Multi-fidelity Learning with Application to PINNs”, 08/2022, MURI project review conference, online.
17. “A Short Note on Physics-Informed Machine Learning”, 09/2022, Imaging Elevated Symposium, UT.
18. “Meta Learning of Interface Conditions for Multi-Domain PINNs”, 01/2023, MURI team seminar (Brown, Stanford, Caltech, and Utah), online.
19. “Multi-fidelity Learning and Active Learning for Scientific Machine Learning”, 03/2024, Computer Science Department, Brigham Young University.
20. “Multi-fidelity Learning and Active Learning for Scientific Machine Learning”, 02/2024, Computer Science Department, University of Idaho.
21. “Multi-fidelity Learning and Active Learning for Scientific Machine Learning”, 07/2024, CIRM workshop, France
22. “Enhanced Machine Learning Solvers for High-Frequency and Multi-Scale PDEs”, 11/2024, Shanghai Jiaotong University, online.
23. “Enhancing Operator Learning with Invertible Models, Active Learning, and Multi-Functional Diffusion”, 1/2025, PhysicsX, online.

ACADEMIC SERVERICES

External Service

Grant review

- Panelist for National Science Foundation (NSF), 2019, 2020, 2021 (twice, on 11/4-11/5, 11/15-11/16), 2022
- Grant Proposal Reviewer for Future Leaders Fellowships (FLF), UK Research and Innovation (UKRI)
- Grant Proposal Reviewer for Medical Research Council (MRC), UKRI

Program Chair

- ICDM 2022 Workshop on Machine Learning on Higher-Order Structured Data (ML-HOS).
- KDD 2020 Workshop on Deep Learning Practice for High-Dimensional Sparse Data.

Conference Reviewer/PC Member

- Area Chair, AAAI Conference on Artificial Intelligence, 2023.
- Area Chair, NeurIPS, 2025.
- Reviewer for Neural Information Processing Systems (NeurIPS), 2015-2023
- Reviewer for International Conference on Learning Representations (ICLR) 2019-2021, 2024
- Reviewer for International Conference on Artificial Intelligence and Statistics (AISTATS) 2019-2021
- Reviewer for IEEE International Conference on Image Processing (ICIP), 2017-2018
- PC Member for International Conference for Machine Learning (ICML), 2014-2015, 2018-2021
- PC Member for The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI), 2019, 2020
- PC Member for the Conference on Uncertainty in Artificial Intelligence (UAI), 2019 - 2021
- PC Member for Symposium on Advances in Approximate Bayesian Inference (AABI), 2017-2020
- PC Member for SIAM International Conference on Data Mining (SDM) 2019-2021
- PC Member for ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2019, 2020
- PC Member for KDD workshop on AdKDD and TargetAD, 2017

Session Chair

- KDD 2019 Session Chair on Mining in emerging applications I and Machine learning themes I

Journal Editor/Reviewer

- Action Editor, Neural Networks (IF 7.8)
- Guest Editor, Frontiers in Big Data
- Reviewer for Journal of Machine Learning Research (JMLR)
- Reviewer for IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- Reviewer for Computer Methods in Applied Mechanics and Engineering (CMAME)
- Reviewer for Journal of Computing Physics (JCP)
- Reviewer for SIAM Journal on Applied Dynamical Systems (SIADS)
- Reviewer for IEEE Transactions on Multimedia (MM)
- Reviewer for IEEE Transactions on Knowledge and Data Engineering (TKDE)
- Reviewer for IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- Reviewer for Information Processing and Management (IPM) Journal
- Reviewer for Statistical Analysis and Data Mining: The ASA Data Science Journal
- Reviewer for PLOS ONE journal