

Dr. Weijia Zhang

Research Interests: Causal Inference, Machine Learning, Survival Analysis

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Google Scholar Profile: <https://scholar.google.com.au/citations?user=7jmAPvAAAAAJ&hl>

Work Experiences

Lecturer University of Newcastle	Feb 2023 – Present Newcastle, Australia
Associate Professor Southeast University	Jul 2021 – Dec 2022 Nanjing, China
Chief Data Scientist Hexing Equipment Co., Ltd.	Sep 2021 – Jul 2021 Shenyang, China
Course Coordinator University of South Australia.	Jul 2019 – Jul 2020 Mawson Lakes, Australia
Research Fellow University of South Australia.	May 2018 - Sep 2020 Mawson Lakes, Australia

Educations

Ph.D. , Information Technology and Mathematical Science University of South Australia. Supervisor: Prof. Jiuyong Li.	2014-2018 Australia
M.S. , Computer Science Nanjing University. Supervisor: Prof. Zhi-Hua Zhou.	2011-2014 Nanjing, China
B.S. , Mathematics Nanjing University	2007-2011 Nanjing, China

Publications

(2022) **Zhang, W.**, Zhang, X., Deng, H., Zhang, M.-L. Multi-instance causal representation learning for instance label prediction and out-of-distribution generalization. *Advances in Neural Information Processing Systems 35 (NeurIPS-2022)*, 34940--34953. (**CORE-A* Conference**).

(2022) Yang, S., Zhang, Y., Jia Y., **Zhang, W.**, Local low-rank approximation with superpixel-guided locality preserving graph for hyperspectral image classification. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 15: 7741-7754. (**Impact Factor: 4.715, JCR Q1**)

(2022) Zhang, X., **Zhang, W.**, Zhao, Y., Zhu, Q., Imbalanced volunteer engagement in cultural heritage and crowdsourcing: a task-related exploration based on causal inference. *Information Processing & Management*, 59 (5): 103027. (**Impact Factor: 7.46, JCR Q1**)

(2021) **Zhang, W.**, Non-i.i.d. multi-instance learning for predicting instance and bag labels using variational auto-encoder. In *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI-2021)*, pages 3377-3383. (**CORE-A* Conference**)

(2021) **Zhang, W.**, Liu, L and Li, J., Treatment effect estimation with disentangled latent factors. In *Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI-2021)*, pages 10923-10930. (**CORE-A* Conference**)

(2021) **Zhang, W.**, Liu, L and Li, J., A unifying review on treatment effect heterogeneity modelling and uplift modelling. *ACM Computing Surveys*, 54(8):162. (**Impact Factor: 14.32, JCR Q1**)

(2021) Li, J., **Zhang, W.**, Liu, L., Yu, K., Le, T. and Liu, J., A general framework for causal classification. *International Journal of Data Science and Analytics*, 11:127-139. (**EI**)

(2020) **Zhang, W.**, Li, J. and Liu, L., Distribution robust multi-instance learning with stable instances. In

Proceedings of the 24th European Conference of Artificial Intelligence (ECAI-2020). (**CORE-A Conference**)

(2020) Tomasoni, M., Gómez, S., Crawford, J., **Zhang, W.**, Choobdar, S., Marbach, D. and Bergmann, S., MONET: a toolbox integrating top-performing methods for network modularisation. *Bioinformatics*. 36(12): 3920–3921. (**Impact Factor: 6.93, JCR Q1**)

(2019) Choobdar, S., et al., Assessment of network module identification across complex diseases. *Nature Methods*. 16: 843–852. (**Impact Factor: 53.49, JCR Q1, as a consortium author**)

(2018) **Zhang, W.**, Le, T., Liu, L., and Li, J., Estimating heterogeneous treatment effects by balancing heterogeneity and fitness. *BMC Bioinformatics*, 19: 514. (**Impact Factor: 4.34, JCR Q2**)

(2018) Xu, T., Su, N., Liu, L., Zhang, J., Wang, H., **Zhang, W.**, Gui, J., Yu, K., Li, J. and Le, T., miRBaseConverter: An R/Bioconductor package for converting and retrieving miRNA information in different versions of miRbase. *BMC Bioinformatics*, 19: 518. (**Impact Factor: 4.34, JCR Q2**)

(2017) **Zhang, W.**, Le, T., Liu, L., Zhou, Z.-H., and Li, J., Mining heterogeneous causal effects for personalized cancer treatment. *Bioinformatics*, 33(15): 2372-2378. (**Impact Factor: 6.93, JCR Q1**)

(2016) **Zhang, W.**, Le, T., Liu, L., Zhou, Z.-H. and Li, J., Predicting miRNA targets by integrating gene regulatory knowledge with expression profiles. *PLOS One*, 11(4): e0152860. (**Impact Factor: 3.24**)

(2014) **Zhang, W.** and Zhou, Z.-H., Multi-Instance Learning with Distribution Change. In *Proceedings of the 28th AAAI Conference on Artificial Intelligence (AAAI-2014)*, pages 2184–2190. (**CORE-A* Conference**)

Working Papers

(2023) Deng, H., **Zhang, W.**, Zhang, M.-L. Learning from instance-dependent noisy labels by separating style from content.

(2023) Cheng, D., Li, J., Liu, L., Xu, Z., **Zhang, W.**, Liu, J., Le, T. Disentangled representation learning for causal inference with instruments.

Teachings

Lecturer, Pattern Recognition, Southeast University, 2022. (Student feedback **ranked 2nd** out of 64 courses taught at the School of Computer Science and Engineering, Southeast University)

Course Coordinator & Lecturer, Predictive Analytics, University of South Australia, 2020.

Course Coordinator & Lecturer, Unsupervised Methods in Analytics, University of South Australia, 2019.

Lecturer & Practical Supervisor, Data and Web Mining, University of South Australia, 2018 and 2020.

Teaching Assistant, Data Structures and Algorithms, Nanjing University, 2014.

Industrial Collaborations

Chang'an Automobile Co., Ltd 2021.12-2022.12. Leading a team of graduate students, we designed and implemented a failure prediction system for vehicle start-up batteries based on weakly supervised survival analysis. The system is currently being deployed by Chang'an Automobile Co., Ltd production engineers.

Santos, Ltd. 2018.5-2019.5. Working as a group of two, we designed and implemented an autonomous fault detection system for the progressive cavity pumps in CSG wells. The system significantly reduced the need for human intervention in CSG well operations and reduced maintenance costs.

Telstra, Co. Ltd. 2017.9-2018.2. I designed and implemented a customer churn prevention system for post-paid mobile customers. The outcome improved customer satisfaction, reduced operating costs for the platform, and provided evidence-based suggestions to managers.

Grants

Causality-based weakly supervised learning. CI, 300,000 CNY. Funded by National Science Foundation of China.

Weakly supervised survival analysis. CI, 585,000 CNY. Funded by Chang'an Automobile Co. Ltd.

Towards causality-based weakly supervised learning. CI, 200,000 CNY. Funded by Southeast University.

Learning from ambiguous supervision. CI, 100,000 CNY. Funded by Southeast University.

While working at the University of South Australia, I have also participated in multiple ARC funded grants and produced tangible research outputs, such as ARC DP 170101306, 140103617, 130104090...

Academic Services

I serve as program committee members of CORE A*/A conferences and reviewers for prestigious academic journals, including:

- Conference Program Committee Member: AAAI-2021/2022/2023 (CORE A*), IJCAI-2020/2022 (CORE A*), UAI-2022 (CORE A), ECAI-2020/2022 (CORE A), AusDM-2018 ~ 2022, etc.
- Invited Journal Reviewer: BMC Bioinformatics, Biometrics, Frontiers in Oncology, IEEE Transactions on Systems, Man & Cybernetics (IEEE TSMC), IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE TPAMI), Information Processing & Management (IPM), International Journal of Data Science and Analytics (JDSA), Journal of Computer Science and Information Technology (JCST), Knowledge-Based Systems (KBS), Machine Learning (MLJ), PLOS One...

Awards and prizes

Top Program Committee Member, The 38th Conference on Uncertainty in Artificial Intelligence, 2022.

Top Program Committee Member, The 35th AAAI Conference on Artificial Intelligence, 2021.

2nd Place, Team Leader, DREAM Data Mining Challenge on Disease Module Identification, 2016.

2nd Place, 3 Minute Thesis Competition (3MT®), School of Information Technology and Mathematical Science, University of South Australia, 2016.

University President's Scholarship, University of South Australia, 2014.

ITMS Scholarship, University of South Australia, 2014.

Best Master Thesis Award, Department of Computer Science and Technology, Nanjing University, 2014.

Student Supervisions

Yuhang Li, Master Degree by Research, Southeast University.

Xin Liu, Master Degree by Research, Southeast University.

Wei Tang, Ph.D. Candidate, Southeast University. Co-supervised with Prof. Min-Ling Zhang.

Zhaofei Wang, Msc Student, Southeast University. Co-supervised with Prof. Min-Ling Zhang.

Menghan Yu, Msc Student, Southeast University. Co-supervised with Prof. Min-Ling Zhang.

Hanwen Deng, Msc Student, Southeast University. Co-supervised with Prof. Min-Ling Zhang.

Yiming Lu, Msc Student, Southeast University. Co-supervised with Prof. Min-Ling Zhang.