Dr. Weijia Zhang

Research Interests: Causal Inference, Machine Learning, Survival Analysis Email: weijia.zhang@newcastle.edu.au | Website: University Profile: Personal Website Google Scholar Profile: https://scholar.google.com.au/citations?user=7jmAPvAAAAAJ&hl

Work Experiences

Lecturer University of Newcastle **Associate Professor** Southeast University **Research Fellow** University of South Australia.

Feb 2023 – Present Newcastle, Australia Jul 2021 – Dec 2022 Nanjing, China May 2018 - Sep 2020 Mawson Lakes, Australia

Educations

Ph.D., Information Technology and Mathematical Science	2014-2
University of South Australia. Supervisor: Prof. Jiuyong Li.	Austr
M.S., Computer Science	2011-2
Nanjing University. Supervisor: Prof. Zhi-Hua Zhou.	Nanjing, C
B.S. , Mathematics	2007-2
Nanjing University	Nanjing, C

Publications

(2024) Tang, W., Zhang, W., Zhang, M.-L., Exploiting conjugate label information for multi-instance partiallabel learning. In Proceedings of the 33rd International Joint Conference on Artificial Intelligence (IJCAI-2024), in press. (CORE-A* Conference)

(2024) Wang, Z., Zhang, W., Zhang, M.-L., Proposal Feature Learning Using Proposal Relations for Weakly Supervised Object Detection. 2023 IEEE International Conference on Multimedia and Expo (ICME-2023), in press. (CORE-A Conference)

(2024) Boo Y. L., Gupta M., Zhang W., Fournier-Viger P., The Innovative Use of Data Science to Transform How We Work and Live. Data Science and Engineering, 9: 3-4. (Special Issue Editorial)

(2024) Zhang, W., Ling, C. K., Zhang, X., Deep Copula-Based Survival Analysis for Dependent Censoring with Identifiability Guarantees. In Proceedings of the 38th AAAI Conference on Artificial Intelligence, 20613-20621. (CORE-A* Conference)

(2023) Tang, W., Zhang, W., Zhang, M.-L., Disambiguated Attention Embedding for Multi-Instance Partial-Label Learning. Advances in Neural Information Processing Systems 36 (NeurIPS-2023), 56756-56771. (CORE-A* Conference)

(2023) Tang, W., Zhang, W., Zhang, M.-L., Multi-instance partial-label learning: Towards exploiting dual inexact supervision. Science China Information Science, 67: 132103. (Impact Factor: 5.6, JCR Q1)

(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

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(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)

Teachings

Course Coordinator & Lecturer, STAT1060/STAT1070/STAT3040/STAT6160, University of Newcastle, 2023.

Lecturer, Pattern Recognition, Southeast University, 2022. (Student feedback **ranked 1**st out of 93 courses taught that year 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

Page 3

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 platform operating costs, and provided evidence-based suggestions for decision making.

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 and studying at the University of South Australia, I have also contributed to multiple ARC-funded grants such as ARC DP 170101306, 140103617, and 130104090.

Academic Services

Review Editor: Computers in Industry (SCI Q1, Impact Factor 10.0).

Doctoral Consortium Chair: The 24th Australasia Data Science and Machine Learning Conference (AusDM'24).

I also serve as a program committee member/reviewer for several CORE A*/A conferences and journals:

- Conference Program Committee Member: AAAI (2021–2025, CORE A*), IJCAI (2020–2024, CORE A*), ICLR (2023, CORE A*), NeurIPS (2023–2024, CORE A*), ICML (2024, CORE A*), ICDM (2024, CORE A*), UAI (2022–2024, CORE A), ECAI (2020–2024, CORE A), AusDM (2018–2024), and others.
- Invited Journal Reviewer: Journal of Machine Learning Research (JMLR), IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE TPAMI), Machine Learning (MLJ), and others.

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.

Postgraduate Students

Current PhDs: Sultan Mohammed, Na Wang (co-supervisor), Kaosarul Islam (co-supervisor), Wei Tang (co-supervisor).

Current Research Masters: Xin Liu, Zhaofei Wang (co-supervisor), Menghan Yu (co-supervisor).

Graduated Students:

Hanwen Deng, Master by Research (co-supervisor), 2021-2024; Currently at Tencent Ltd.

Yiming Lu, Master by Research (co-supervisor), 2021-2024; Currently at Xiaomi Inc.