

# YANFU ZHANG

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## RESEARCH INTEREST

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Data mining, machine learning, computer vision

## WORK EXPERIENCE

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<b>Assistant Professor</b> William & Mary	Fall 2023 Williamsburg, VA
<b>Research Intern</b> Amazon	Summer 2022 (Remote) San Diego, CA
<b>Research Intern</b> JD Research Lab	Summer 2020 (Remote) Santa Clara, CA
<b>Research Assistant</b> Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences	Spring – Summer 2015 Changchun, China
<b>Research Assistant</b> Institute of Electrics, Chinese Academy of Sciences	Summer 2011 Beijing, China.

## EDUCATION

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<b>Doctor of Science</b>   <i>Computer Engineering</i> University of Pittsburgh	Fall 2017 – Spring 2023 Pittsburgh, PA, USA
<b>Master of Science</b>   <i>Electrical and Computer Engineering</i> University of Rochester	Fall 2015 – Spring 2017 Rochester, NY, USA
<b>Master of Engineering</b>   <i>Optical Engineering</i> University of Chinese Academy of Science	Fall 2012 – Winter 2015 Changchun, Jilin, China
<b>Bachelor of Science</b>   <i>Electrical and Computer Engineering</i> University of Science and Technology of China	Fall 2008 – Spring 2012 Hefei, Anhui, China

## PUBLICATIONS

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### Manuscripts

- [1] R. Bao and **Y. Zhang**, "Safe feature screening for faster group owl models," Under Review, 2024.
- [2] S. Gao, J. Yang, **Y. Zhang**, F. Zheng, and A. Leonardis, "Fusion by filtering: Multi-modal tracking with explicit frequency modulation," Under Review, 2024.
- [3] S. Gao, Z. Zhang, A. Ganjdanesh, **Y. Zhang**, F. Huang, and H. Huang, "A fully differentiable framework for three-dimensional network pruning," Under Review, 2024.
- [4] T. Geng, T. Wang, **Y. Zhang**, J. Duan, W. Guan, and F. Zheng, "Uniav: Unified audio-visual perception for multi-task video localization," Under Review, 2024.
- [5] J. Li, J. Ren, **Y. Zhang**, and H. Huang, "Tighter analysis of data echoing and a communication-efficient variant for data parallelism," Under Review, 2024.
- [6] **Y. Zhang**, X. Wang, L. Luo, R. Bao, G. Liu, W. Chen, and H. Huang, "New biological-knowledge guided computational method for single-cell multi-omics analysis," Under Review, 2024.

## In Press

- [1] S. Gao, J. Li, **Y. Zhang**, W. Cai, and H. Huang, *Device-wise federated network pruning*, CVPR, 2024.
- [2] S. Gao, **Y. Zhang**, F. Huang, and H. Huang, *Bilevel pruning: Unified dynamic and static channel pruning for convolutional neural networks*, CVPR, 2024.
- [3] L. Wang, J. Yang, **Y. Zhang**, F. Wang, and F. Zheng, *Depth-aware concealed crop detection in dense agricultural scenes*, CVPR, 2024.
- [4] Z. Wang, R. Bao, Y. Wu, H. Tang, G. Liu, L. Zhan, W. Jiang, and **Y. Zhang**, *Self-guided knowledge-injected graph neural network for alzheimer's diseases*, MICCAI, 2024.
- [5] X. Wu, S. Gao, Z. Zhang, Z. Li, R. Bao, **Y. Zhang**, X. Wang, and H. Huang, *Auto-train-once: Controller network guided automatic network pruning from scratch*, CVPR, 2024.
- [6] **Y. Zhang**, R. Bao, G. Liu, L. Zhan, P. M. Thompson, and H. Huang, *Brain image synthesis using incomplete multimodal data*, ISBI, 2024.
- [7] **Y. Zhang**, R. Bao, G. Liu, L. Zhan, P. M. Thompson, and H. Huang, *Neurodegenerative disease prediction via transferable deep networks*, ISBI, 2024.

## Peer-reviewed Publications

- [1] S. Gao, Z. Zhang, **Y. Zhang**, F. Huang, and H. Huang, "Structural alignment for network pruning through partial regularization," in *Proceedings of the IEEE/CVF International Conference on Computer Vision*, 2023, pp. 17 402–17 412.
- [2] L. Guo, **Y. Zhang**, H. Tang, S. R. Mackin, P. M. Thompson, H. Huang, and L. Zhan, "Investigating the effect of neuropsychiatric symptoms on alzheimer's diagnosis using multi-modal brain networks," *Alzheimer's & Dementia*, vol. 19, e080376, 2023.
- [3] H. Tang, G. Ma, **Y. Zhang**, K. Ye, L. Guo, G. Liu, Q. Huang, Y. Wang, O. Ajilore, A. D. Leow, *et al.*, "A comprehensive survey of complex brain network representation," *Meta-Radiology*, p. 100 046, 2023.
- [4] Y. Zheng, **Y. Zhang**, H. Huang, G. H. Tison, L. E. Burke, S. Blecker, V. V. Dickson, J. E. Olgin, G. M. Marcus, and M. J. Pletcher, "Interindividual variability in self-monitoring of blood pressure using consumer-purchased wireless devices," *Nursing Research*, vol. 72, no. 4, pp. 310–318, 2023.
- [5] S. Gao, F. Huang, **Y. Zhang**, and H. Huang, "Disentangled differentiable network pruning," in *European Conference on Computer Vision*, Springer Nature Switzerland Cham, 2022, pp. 328–345.
- [6] X. Wang, Z. Xu, H. Hu, X. Zhou, **Y. Zhang**, R. Lafyatis, K. Chen, H. Huang, Y. Ding, R. H. Duerr, *et al.*, "Secant: A biology-guided semi-supervised method for clustering, classification, and annotation of single-cell multi-omics," *PNAS nexus*, vol. 1, no. 4, pgac165, 2022.
- [7] **Y. Zhang**, R. Bao, J. Pei, and H. Huang, "Toward unified data and algorithm fairness via adversarial data augmentation and adaptive model fine-tuning," in *2022 IEEE International Conference on Data Mining (ICDM)*, IEEE, 2022, pp. 1317–1322.
- [8] **Y. Zhang**, H. Gao, J. Pei, and H. Huang, "Robust self-supervised structural graph neural network for social network prediction," in *Proceedings of the ACM Web Conference 2022*, 2022, pp. 1352–1361.
- [9] **Y. Zhang**, S. Gao, and H. Huang, "Recover fair deep classification models via altering pre-trained structure," in *European Conference on Computer Vision*, Springer Nature Switzerland Cham, 2022, pp. 481–498.
- [10] **Y. Zhang**, S. Gao, J. Pei, and H. Huang, "Improving social network embedding via new second-order continuous graph neural networks," in *Proceedings of the 28th ACM SIGKDD conference on knowledge discovery and data mining*, 2022, pp. 2515–2523.
- [11] W. Xian, F. Huang, **Y. Zhang**, and H. Huang, "A faster decentralized algorithm for nonconvex minimax problems," *Advances in Neural Information Processing Systems*, vol. 34, pp. 25 865–25 877, 2021.

- [12] **Y. Zhang**, S. Gao, and H. Huang, "Exploration and estimation for model compression," in *Proceedings of the IEEE/CVF International Conference on Computer Vision*, 2021, pp. 487–496.
- [13] **Y. Zhang**, L. Luo, and H. Huang, "Unified fairness from data to learning algorithm," in *2021 IEEE International Conference on Data Mining (ICDM)*, IEEE, 2021, pp. 1499–1504.
- [14] **Y. Zhang**, L. Luo, W. Xian, and H. Huang, "Learning better visual data similarities via new grouplet non-euclidean embedding," in *Proceedings of the IEEE/CVF International Conference on Computer Vision*, 2021, pp. 9918–9927.
- [15] **Y. Zhang**, L. Zhan, S. Wu, P. Thompson, and H. Huang, "Disentangled and proportional representation learning for multi-view brain connectomes," in *Medical Image Computing and Computer Assisted Intervention–MICCAI 2021: 24th International Conference, Strasbourg, France, September 27–October 1, 2021, Proceedings, Part VII 24*, Springer International Publishing, 2021, pp. 508–518.
- [16] L. Luo, **Y. Zhang**, and H. Huang, "Adversarial nonnegative matrix factorization," in *International Conference on Machine Learning*, PMLR, 2020, pp. 6479–6488.
- [17] X. Wang, Z. Sun, **Y. Zhang**, Z. Xu, H. Xin, H. Huang, R. H. Duerr, K. Chen, Y. Ding, and W. Chen, "Brem-sc: A bayesian random effects mixture model for joint clustering single cell multi-omics data," *Nucleic acids research*, vol. 48, no. 11, pp. 5814–5824, 2020.
- [18] Y. Zheng, **Y. Zhang**, H. Huang, G. H. Tison, L. E. Burke, J. Olgin, G. M. Marcus, and M. J. Pletcher, "One-year patterns of home blood pressure monitoring using consumer-purchased wireless devices in the health eheart study," *Circulation*, vol. 142, no. Suppl\_3, A15429–A15429, 2020.
- [19] I. Fortel, M. Butler, L. E. Korthauer, L. Zhan, O. Ajilore, I. Driscoll, A. Sidiropoulos, **Y. Zhang**, L. Guo, H. Huang, *et al.*, "Brain dynamics through the lens of statistical mechanics by unifying structure and function," in *Medical Image Computing and Computer Assisted Intervention–MICCAI 2019: 22nd International Conference, Shenzhen, China, October 13–17, 2019, Proceedings, Part V 22*, Springer International Publishing, 2019, pp. 503–511.
- [20] **Y. Zhang**, L. Ding, and G. Sharma, "Local-linear-fitting-based matting for joint hole filling and depth upsampling of rgb-d images," *Journal of Electronic Imaging*, vol. 28, no. 3, pp. 033 019–033 019, 2019.
- [21] **Y. Zhang** and H. Huang, "New graph-blind convolutional network for brain connectome data analysis," in *Information Processing in Medical Imaging: 26th International Conference, IPMI 2019, Hong Kong, China, June 2–7, 2019, Proceedings 26*, Springer International Publishing, 2019, pp. 669–681.
- [22] **Y. Zhang**, L. Zhan, W. Cai, P. Thompson, and H. Huang, "Integrating heterogeneous brain networks for predicting brain disease conditions," in *Medical Image Computing and Computer Assisted Intervention–MICCAI 2019: 22nd International Conference, Shenzhen, China, October 13–17, 2019, Proceedings, Part IV 22*, Springer International Publishing, 2019, pp. 214–222.
- [23] **Y. Zhang**, L. Zhan, P. M. Thompson, and H. Huang, "Biological knowledge guided deep neural network for brain genotype-phenotype association study," in *International Workshop on Multimodal Brain Image Analysis*, Springer International Publishing Cham, 2019, pp. 84–92.
- [24] **Y. Zhang**, L. Ding, and G. Sharma, "Hazerd: An outdoor scene dataset and benchmark for single image dehazing," in *2017 IEEE international conference on image processing (ICIP)*, IEEE, 2017, pp. 3205–3209.
- [25] **Y. Zhang**, L. Ding, and G. Sharma, "A local-linear-fitting-based matting approach for accurate depth upsampling," in *2016 IEEE Western New York Image and Signal Processing Workshop (WNYISPW)*, IEEE, 2016, pp. 1–5.
- [26] L. Cao, L. Jin, H. Tao, G. Li, Z. Zhuang, and **Y. Zhang**, "Multi-focus image fusion based on spatial frequency in discrete cosine transform domain," *IEEE signal processing letters*, vol. 22, no. 2, pp. 220–224, 2014.

## RESEARCH GRANTS

*Brain-Computer Interface for Password Input: Enhancing Accessibility for Individuals with Mobility Impairments*,  
 Sponsor: CCI, Total Award: \$50,000, Duration: May 1, 2024 to April 30, 2025, Role: **PI**

## TEACHING EXPERIENCE

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CSCI 680 - Deep Transfer Learning (co-instructor)	Spring 2024
CSCI 680 - Data Mining and Decision Making	Spring 2024
CSCI 303 - Algorithms	Fall 2023

## PROFESSIONAL ACTIVITIES & SERVICES

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### Professional Activities

- Session Chair
  - SDM, Apr 2024
  - KDD, Oct 2021
- Panelist
  - NSF, Jan 2024, Feb 2024
  - W&M Law School Problematic Generative AI, Feb 2024
- PC Member
  - KDD, 2021 - 2023
  - CVPR, 2022-2024
  - ICCV, 2020 - 2022
  - MICCAI, 2020 - 2024
- Journal Reviewer
  - IEEE Transactions on Medical Imaging
  - IEEE Transactions on Intelligent Transportation Systems
  - BioMedical Engineering OnLine
  - IEEE Access

### Professional Services

SIAM International Conference on Data Mining (SDM24), Session Chair	April 2024
W&M Law School Problematic Generative AI, Panelist	Feb 2024
CSCI-W&M, Undergraduate Curriculum Committee	Fall 2023 - Spring 2024