Yifei, ZHANG

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RESEARCH INTERETS

My research interest is broadly Representation Learning, focusing on extracting meaningful representation from various data types, including unlabeled, noisy, adversarial, and graph data. Specifically, I recently focus on theoretical and algorithmic approaches for Large Language Models (Self-Supervised Learning, Parameter Efficient Learning), Safety of Foundation Models (Federated, Watermarking), and Graph Learning.

EDUCATION

🎓 **The Chinese University of Hong Kong** — Aug. 2020 - July 2024, Hong Kong, China
Ph.D. in Comp. Sci. & Eng.
Advised by Prof. Irwin King (AAAS & IEEE & ACM Fellow)

🎓 **The Australian National University** — July 2016 - July 2018, Canberra, Australia
MPhil. in Computer Science , Computational Media Lab.
Worked with Prof. Marian-Andrei Rizoiu and Prof. Lexing Xie.

🎓 **ZhengZhou University** — Sep. 2012 - July 2016, ZhengZhou, China
B.Eng. in Electrical Engineering

POS-DOC. EXPERIENCE

🎓 **Nanyang Technological University** — Oct. 2024 - Oct. 2025, Singapore
Research Scientist, College of Computing and Data Science
Work with Prof. Yu Han

🎓 **The Chinese University of Hong Kong** — Aug 2024 - Oct. 2024, Hong Kong, China
Honorary Postdoctoral Association, Dept. of Comp. Sci. & Eng.
Work with Prof. Irwin King

PRE-DOC. EXPERIENCE

💼 **Alibaba Group** — Hangzhou, China, May 2019 - Aug. 2020
Senior Applied Machine Leaning Engineer (Full Time)
- Work on Search and Recommendation System

💼 **JD.com** — July 2018-May 2019, Beijing, China
Applied Machine Leaning Engineer (Full Time)
- Developed a series of Privacy-Preserving Machine Learning (PPML) techniques

💼 **CRISO's Data61** — Canberra, Australia, Nov. 2016 - Mar. 2017
Research Intern
- Quantify the role and influence of social bots in the democratic process[6].

SELECTED HONORS & AWARDS

🏆 Awardee of Huawei TopMinds Program (Known as Tian Cai Shao Nian) — Spring 2024
🏆 Awardee of Mei Tuan BeiDou Program (Special Program for Talent Candidates) — Spring 2024
🏆 Hong Kong Postgraduate Studentships Award (CUHK) — Autumn 2020
🏆 CECS Deans List(ANU) — Autumn 2018

ACADEMIA ACTIVITY

👥 **Aear Chair**
- Conference on Neural Information Processing Systems (NeurIPS) 2025

👥 **Program Committee/Conference Reviewer**
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2022, 2023
- AAAI Conference on Artificial Intelligence (AAAI) 2022, 2023
- Conference on Neural Information Processing Systems (NeurIPS) 2022, 2023
- International Conference on Learning Representation (ICLR) 2023, 2024
- International Conference on Machine Learning (ICML) 2022, 2023 2024
- International World Wide Web Conference (TheWebConf) 2022, 2023

👥 **Journal Reviewer**
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- Neurocomputing (NEUCOM)

IN REVIEWING & PREPRINT

[1] **[Preprint]** Robustifying Zero-Shot Vision Language Models by Subspaces Alignment
Junhao Dong, Piotr Koniusz, Liaoyuan Feng, **Yifei Zhang**, Hao Zhu, Weiming Liu, Xinghua Qu, Yew-Soon Ong
[Submit to ICCV'25].

[2] **[Preprint]** Adversarially Robust Zero-shot Vision-Language Hierarchical Learning
Junhao Dong, Piotr Koniusz, **Yifei Zhang**, Hao Zhu, Weiming Liu, Meng Luo, Xinghua Qu, Yew-Soon Ong
[Submit to ICCV'25].

[3] **[Preprint]** Soft Separation and Distillation:Toward Global Uniformity in Federated Unsupervised Learning
Hung-Chieh Fang, Hsuan-Tien Lin, Irwin King, **Yifei Zhang**[†] (Corresponding Author)
[Submit to ICCV'25].

[4] **[Survey]** Low-Rank Adaptation for Foundation Models: A Comprehensive Review
Menglin Yang, Jialin Chen, **Yifei Zhang**, Jiahong Liu, Jiasheng Zhang, Qiyao Ma, Harshit Verma, Qianru Zhang, Min Zhou, Irwin King, Rex Ying
[Submit to TMPAI].

[5] **[Preprint]** Track and Tweak: Monitoring and Improving Group Fairness for Temporal Graph Neural Networks in Real Time
Zixing Song, Muzhi Li, **Yifei Zhang**, Irwin King, José Miguel Hernández-Lobato
[Submit to KDD'25].

[6] **[Survey]** Recent Advances of Multimodal Continual Learning: A Comprehensive Survey
Dianzhi Yu, Xinni Zhang, Yankai Chen, Aiwei Liu, **Yifei Zhang**, Philip S. Yu, Irwin King

[Submit to TNNLS].

[7] **[Preprint]** PISA: Compressive Sensing Adaptation of Large Language Models
Minxue Xia, Hao Zhu, **Yifei Zhang**[†] (Corresponding Author)
[Submit to KDD'25].

[8] **[Preprint]** Less is More: Extreme Gradient Boost Rank-1 Adaption for Efficient Finetuning of LLMs
Yifei Zhang, Hao Zhu, Aiwei Liu, Han Yu, Piotr Koniusz and Irwin King
[Submit to ICML'25].

[9] **[Preprint]** Outlier-aware Projected Wasserstein Distances for Few-Shot Open-set Learning
Yifei Zhang, Hao Zhu, Yuchao Dai, Piotr Koniusz and Irwin King
[Submit to ICML'25].

[10] **[Preprint]** FedGBA: Gradient-Boosted Adaption for Federated Finetuning of Found. Models
Yifei Zhang, Hao Zhu, Zixing Song, Yankai Chen, Menglin Yang, Piotr Koniusz, Han Yu
[Submit to KDD'25].

JOURNAL PUBLICATIONS

[11] **[TKDE]** Ten Challenging Problems in Federated Foundation Models
(First survey discussion the open problems in FL@FM)
Tao Fan, Xuemei Cao, Chee Seng Chan, Senior, Qian Chen, Yiqiang Chen, Lixin Fan, Yihui Feng, Hanlin Gu, Yang Gu, Jiaxiang Geng, Bing Luo, Senior, Shuoling Liu, Win Kent Ong, Chao Ren, Jiaqi Shao, Chuan Sun, Xiaoli Tang, Hong Xi Tae, Yongxin Tong, Senior , Shuyue Wei, Fan Wu, Wei Xi, Mingcong Xu, He Yang, Xin Yang, Jiangpeng Yan, Hao Yu, Han Yu, Teng Zhang, **Yifei Zhang**, Xiaojin Zhang, Zhenzhe Zheng, and **Qiang Yang**[*]   CCF-A
[Apart from the first and corresponding authors, authors are listed in **alphabetical order** by their last names].

[12] **[TKDE]** Towards Effective Top-N Hamming Search viaBipartite Graph Contrastive Hashing
In IEEE Transactions on Knowledge and Data Engineering
Yankai Chen, Yixiang Fang, **Yifei Zhang**, Chenhao Ma, and lrwin King   CCF-A

[13] **[TIST]** A Survey of Trustworthy Federated Learning: Issues, Solutions, and Challenges In ACM Transactions on Intelligent Systems and Technology.
Yifei Zhang, Dun Zeng, Jinglong Luo, Xinyu Fu, Zenglin Xu, Irwin King

Conference
Publications

[14] **[CVPR'25]** BiLoRA: Almost-Orthogonal Parameter Spaces for Continual Learning in Conference on Computer Vision and Pattern Recognition
Hao Zhu*, **Yifei Zhang*** Junhao Dong, Piotr Koniusz (* indicate equal contribution)
[22.1% of acceptance, 2878 /13,008]. CCF-A.

[15] **[CVPR'25]** pFedMixF: Personalized Federated Class-Incremental Learning with Mixture of Frequency Aggregation in Conference on Computer Vision and Pattern Recognition
Yifei Zhang, Hao Zhu, Alysa Ziying Tan, Dianzhi Yu, Longtao Huang, Han Yu
[22.1% of acceptance, 2878 /13,008]. CCF-A.

[16] **[ICLR'25]**(**Spotlight,Top 5%**) Can Watermarked LLMs be identified by Users via Crafted Prompts In International Conference on Learning Representations
Aiwei Liu, Sheng Guan, Yiming Liu, Leyi Pan, **Yifei Zhang**, Liancheng Fang, Lijie Wen, Philip S. Yu, Xuming Hu.
[32.08% of acceptance, 3646 /11672]. Tsinghua-A.

[17] **[KDD'25]** Understanding and Mitigating Hyperbolic Dimensional Collapse in Graph Contrastive Learning In SIGKDD Conference on Knowledge Discovery and Data Mining.
Yifei Zhang, Hao Zhu, Mengling Yang, Jiahong Liu, Rex Ying, Piotr Koniusz and Irwin King
[Early Accept to KDD'25] CCF-A.

[18] **[IJCAI'24]** A Systematic Survey on Federated Semi-supervised Learning. In Internationl Joint Conference on Artificial Interligence
Zixing Song **Yifei Zhang**, Zengling Xu, and Irwin King CCF-A

[19] **[KDD'24]** Geometric View of Soft Decorrelation in Self-Supervised Learning. In SIGKDD Conference on Knowledge Discovery and Data Mining. In SIGKDD Conference on Knowledge Discovery and Data Mining.
Yifei Zhang, Hao Zhu, Zixing Song, Yankai Chen, Ziqiao Meng, Piotr Koniusz and Irwin King CCF-A
[20.12% of acceptance, 409/2046].

[20] **[NAACL'24]** Towards Efficient Federated Multilingual Modeling with LoRA-based Language Family Clustering. In Conference on Neural Information Processing Systems
In 2024 Annual Conference of the North American Chapter of the Association for Computational Linguistics.
Zhihan Guo, **Yifei Zhang**, Zhuo Zhang, Zenglin Xu and Irwin King. CCF-B

[21] **[NeurIPS'23]**(**Spotlight, Top 2%**) Mitigating the Popularity Bias in Graph Collaborative Filtering: A Dimensional Collapse Perspective. In Conference on Neural Information Processing Systems
Yifei Zhang, Hao Zhu, Yankai Chen, Zixing Song, Piotr Koniusz and Irwin King CCF-A
[26.1% of acceptance,3218/12343].

[22] **[NeurIPS'23]**(**Spotlight, Top 2%**) No Change, No Gain: Empowering Graph Neural Networks with Expected Model Change Maximization for Active Learning. In Conference on Neural Information Processing Systems
Zixing Song **Yifei Zhang**, and Irwin King CCF-A
[26.1% of acceptance, 3218/12343].

[23] **[NeurIPS'23]** Optimal Block-wise Asymmetric Graph Construction for Semi-supervised Learning. In Conference on Neural Information Processing Systems
Zixing Song **Yifei Zhang**, and Irwin King CCF-A
[26.1% of acceptance, 3218/12343].

[24] **[KDD'23]** Cross-Scale Contrastive Graph Knowledge Synergy. In SIGKDD Conference on Knowledge Discovery and Data Mining.
Yifei Zhang, Yankai Chen, Zixing Song, and Irwin King CCF-A
[22.12% of acceptance, 313/1416].

[25] **[SIGIR'23]** WSFE: Wasserstein Sub-graph Feature Encoder for Effective User Segmentation in Collaborative Filtering.In International ACM SIGIR Conference on Research and Development in Information Retrieval.
Yankai Chen, **Yifei Zhang**, Zixing Song, Menlin Yang, Ma Chen, and Irwin King CCF-A
[25.12% of acceptance, 154/613]

[26] **[WWW'23]** Bipartite Graph Convolutional Hashing for Effective and Efficient Top-N Search in Hamming Space.. In Proceedings of The Web Conference 2023.
Yankai Chen, Yixiang Fang , **Yifei Zhang** and Irwin King CCF-A
[19.2% of acceptance, 365/1900].

[27] **[AAAI'23] (Oral, Top 10%)** Spectral Feature augmentation for Graph Contrastive Learning. In Thirty-Seventh AAAI Conference on Artificial Intelligence.
Yifei Zhang, Hao Zhu, Zixing Song, Piotr Koniusz and Irwin King   CCF-A
[19.8% acceptance, 1721/8777]

[28] **[AAAI'23]** Graph Component Contrastive Learning for Concept Relatedness Estimation. In Thirty-Seventh AAAI Conference on Artificial Intelligence
Yueen Ma, Zixing Song, Xuming Hu., Jingjing Li. **Yifei Zhang** and Irwin King   CCF-A
[19.8% acceptance, 1721/8777]

[29] **[KDD'22]** COSTA: Covariance Preserved Feature Augmentation for Graph Contrastive Learning. In SIGKDD Conference on Knowledge Discovery and Data Mining.
Yifei Zhang., Hao Zhu, Ziqiao Meng, Piotr Koniusz and Irwin King   CCF-A
[14.9% acceptance, 254/1695].

[30] **[KDD'22]** Towards an Optimal Asymmetric Graph Structure for Robust Semi-supervised Node Classification. In SIGKDD Conference on Knowledge Discovery and Data Mining
Zixing Song, **Yifei Zhang**, and Irwin King   CCF-A
[14.9% acceptance, 254/1695].

[31] **[WWW'22]** Graph-adpative Rectified Linear Unit for Graph Neural Networks. In Proceedings of The Web Conference 2022.
Yifei Zhang, Hao Zhu, Ziqiao Meng, Piotr Koniusz and Irwin King   CCF-A
[17.7% of acceptance, 232/1822].

[32] **[CIKM'21]** Semi-supervised Multi-label Learning for Graph-structured Data. In Proceedings of the 30th ACM International Conference on Information & Knowledge Management.
Zixing Song, Ziqiao Meng, **Yifei Zhang**, and Irwin King   CCF-B
[21.7% acceptance (271/1251)]

[33] **[ICASSP'20]** Discrete Wasserstein Autoencoders for Document Retrieval. In 2020 IEEE International Conference on Acoustics, Speech and Signal Processing.
Yifei Zhang and Hao Zhu   CCF-B

[34] **[NAACL'19]** Doc2hash: Learning Discrete Latent variables for Documents Retrieval. In Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies.
Yifei Zhang and Hao Zhu   CCF-B
[26.3% acceptance (281/1067)].

[35] **[ICWSM'18]** #DebateNight: The Role and Influence of Socialbots on Twitter During the 1st 2016 US Presidential Debate. In Twelfth International AAAI Conference on Web and Social Media.
Rizoiu, M. A., Graham, T., Zhang, R., **Yifei Zhang**, Ackland, R., Lexing Xie   CCF-B

WORKSHOP
[36] **[IJCAI'19-FLW]** Deep Neural Network for Asymmetrically Collaborative Machine Learning with Additively Homomorphic Encryption. In The 1st International Workshop on Federated Machine Learning for User Privacy and Data Confidentiality.
Yifei Zhang and Hao Zhu
Solutions have been included in **FATE**, an industry level open source library for federated learning. See *this* for detail

[37] **[WWW'23-FLW]** A Survey of Trustworthy Federated Learning with Perspectives on Security, Robustness, and Privacy.
Yifei Zhang, Dun Zeng, Jinglong Luo., Zenglin Xu, and Irwin King

FUNDING PROPOSAL

SELECTED TALKS

I was invited by various organizations and media to give talk on several research topics

🗨 "Self-supervised Learning on Graph: From Theory to Pracetive", Zhejiang University, cover by AI Times and Paperweekly

🗨 "Covariance Preserved Contrastive Learning", Online, cover by AI Times and Paperweekly

🗨 "Spectral View on Self-supervised learning", Huawei, LoG Seminar

🗨 "Graph Representation Learning and its application", Xi'an, Northwestern Polytechnical University

TEACHING ASSISTANT

🏛 CSCI2100A: Data Structure (Head TA)	Spring 2023
🏛 CSCI3150: Computer Science and Society	Spring 2022
🏛 CSCI5650: Graph Neural Networks (Graduated-Level Course)	Autumn 2021
🏛 CSCI3150: Computer Science and Society	Spring 2021
🏛 CSCI1130: Introduction to Computing Using Java	Autumn 2020