

Zhen Fang

Birth Day 1992.04.16
Address 117 39 Rothschild Ave, Rosebery, NSW 2018
UTS Profile <https://profiles.uts.edu.au/Zhen.Fang>
Google scholar <https://scholar.google.com/citations?user=OzD6WJcAAAAJ&hl=en>
Email zhen.fang@uts.edu.au
Phone +61 452363677

Current and Previous Appointments

Work

- Nov, 2023 - Present** **Lecturer** (Corresponding to Tenured Assistant Professor in the Macau Academic System)
- Australian Artificial Intelligence Institute, Faculty of Engineering & Information Technology, University of Technology Sydney
 - University of Technology Sydney is ranked **88th** amongst universities worldwide (2025 QS World University Rankings), is the top university under fifty years of age in Australia, and ninth globally (Times Higher Education Young University Rankings 2023)
- Mar, 2023 - Nov, 2023** **Lecturer (Research Intensive)**
- Nov, 2023** - Project: ARC Laureate
- Supervisor: Dist Prof. Jie Lu (Officer of the Order of Australia, IEEE Fellow, IFSA Fellow, Australian Computer Society Fellow, and Australian Laureate Fellow in AI)
 - Institute: Australian Artificial Intelligence Institute, University of Technology Sydney
- Nov, 2021 - Mar, 2023** **Postdoctoral Researcher**
- Mar, 2023** - Project: ARC Laureate
- Supervisor: Dist Prof. Jie Lu
 - Institute: Australian Artificial Intelligence Institute, University of Technology Sydney

Teaching

- Aug, 2023 - Dec, 2023** **Tutor-Assignment Marking**
- Course: 41040 Introduction to AI (undergraduate group),
 - University: University of Technology Sydney
- Aug, 2023 - Dec, 2023** **Tutor-Assignment Marking**
- Course: 42172 Introduction to AI (postgraduate group),
 - University: University of Technology Sydney
- Feb, 2023 - Jun, 2023** **Guest Lecturer**
- Course: Computer Science Studio 2,
 - University: University of Technology Sydney
- Sep, 2017 - Oct, 2017** **Teaching Assistant**
- Course: Calculus
 - School: School of Natural Sciences and Mathematics, The University of Texas at Dallas, United States

Education

Jan, 2018 - PhD Student in Computer Science: Artificial Intelligence and Machine Learning

Oct, 2021

- Supervisor: Dist Prof. Jie Lu, Prof. Guangquan Zhang
- University: University of Technology Sydney, Australia

Sep, 2014 - Master Student in Pure Mathematics: Geometry Analysis (by Research)

Jul, 2017

- Supervisor: Prof. Bo Guan (Professor at Ohio State University)
- University: Xiamen University, China

Sep, 2010 - Undergraduate Student in Pure Mathematics

Jul, 2014

- Supervisor: Prof. Chunyou Sun
- University: Lanzhou University, China

Key Research Achievements and Evidence of Broader Impact

Prizes and Awards

• ARC Discovery Early Career Researcher Award 2025

- 200 per year across all disciplines in Australia.

• NeurIPS 2022 Outstanding Paper Award

- This award is one of the **top** awards in machine learning and artificial intelligence.
- NeurIPS is a **top**-tier conference in the field of machine learning and artificial intelligence. Along with ICML and ICLR, it is regarded as one of the most challenging, prestigious, and influential conferences in the realm of machine learning (Ranking 1-2 among all machine learning conferences).
- Dr. Fang's paper "Is Out-of-distribution Detection Learnable?" was selected for NeurIPS 2022 Outstanding Paper Award from a total of **10,411** submissions. Among the **10,411** papers submitted to NeurIPS, **2,672** were accepted, and only **13** of these received the Outstanding Paper Award.
- Dr. Fang has won this award for China, marking the **fourth** time in the past 20 years that an Chinese scholar has achieved this accolade in the capacity of a lead author.
- Dr. Fang has won this award for Australia, marking the **first** time in the past 10 years that an Australian scholar has achieved this accolade in the capacity of a lead author.
- The awarded work addressed an **open problem** in artificial intelligence and machine learning, specifically focusing on the theoretical guarantee of out-of-distribution detection, which is the core topic of reliable machine learning and responsible artificial intelligence. This work discovered the sufficient and necessary conditions to determine when an out-of-distribution detection is learnable or unlearnable.

• The 2023 Australasian AI Emerging Researcher Award

- This award is the **top** Australian AI award for early career researcher.

• AJCAI 2023 Outstanding Service Award

• NeurIPS 2022 Outstanding Reviewer

• AAIL Student Best Paper Award 2021 in the category of AI impact

- The **top** student award at Australian Artificial Intelligence Institute, University of Technology Sydney

Grants Regarding Trustworthy Machine Learning

• Transfer Learning for Reliable Data Detection in Open-set Environments

- Chief Investigators: **Zhen Fang**
- Duration: from 2025.01 to 2027.12
- Amount: AUD452, 831 + AUD50, 000 (Support from UTS) \approx MOP2740,000
- Supported by: Australian Research Council (ARC)
- Grant Number: DE250100363

Research Leadership

- The 17th FLINS Conference on Computational Intelligence in Decision and Control - The 21st ISKE Conference on Intelligence Systems and Knowledge Engineering.

Workshop Chairs: Cengiz Kahraman, Guangquan Zhang, Qian Liu, **Zhen Fang**

- Australasian Joint Conference on Artificial Intelligence 2025.

Workshop/Tutorial Chairs: Yanbin Liu, **Zhen Fang**, Ibrahim RADWAN

- IEEE International Conference on Fuzzy Systems 2024 Special Issue on “Fuzzy Machine Learning”.

Organizers and Chairs: Keqiuyin Li, Hua Zuo, **Zhen Fang**, Luis Martínez, Guangquan Zhang, Jie Lu

- International Joint Conference on Neural Networks 2024 Special Issue on “Domain Adaptation for Complex Situations: Theories, Algorithms and Application”.

Organizers and Chairs: Keqiuyin Li, Hua Zuo, **Zhen Fang**, Jie Lu, Luis Martínez, Guangquan Zhang

- International Conference on Intelligent Systems and Knowledge Engineering 2023.

Publication Chairs: Xiaoping Qiu, Junbo Zhang, Li Zou, **Zhen Fang**

- Australasian Joint Conference on Artificial Intelligence. 2023

Workshop Chairs: **Zhen Fang**, Mingming Gong, Mehrtash Harandi

- International Joint Conference on Neural Networks 2023 Special Issue on “Domain Adaptation for Complex Situations: Theories, Algorithms and Application”.

Organizers and Chairs: **Zhen Fang**, Jie Lu, Jun Wang, Luis Martínez, Ivor W Tsang, Hua Zuo, Feng Liu, Guangquan Zhang

- International Joint Conference on Neural Networks 2022 Special Issue on “Transfer Learning under Weak Supervision”. **Organizers and Chairs:** Feng Liu, Hua Zuo, **Zhen Fang**, Jie Lu

- Frontiers in Artificial Intelligence Special Issue on “Out-of-distribution Learning: Algorithms and Applications”. **Guest Editors:** Bo Han, Tongliang Liu, Mingming Gong, **Zhen Fang**, Feng Liu

Invited Talks

- “Generalized Out-of-distribution Detection: Theory and Algorithm ”, UQ Data Science Seminar, the University of Queensland , Online, 23 August, 2023

- “Autonomous Out-of-distribution Detection: Theory and Applications ”, International Joint Conference on Neural Networks Workshop on Autonomous Learning in Complex Decision Situations , 23 June, 2023

- “Generalized Out-of-distribution Detection Theory”, University of Chinese Academy of Sciences, Online, 10 March, 2023

- “Generalized Out-of-distribution Detection: Theory and Application”, International Conference on Nano Bio Intelligence, 18 June, 2023

- “Out-of-distribution Detection Theory”, group on “OOD Detection and Generalization” at Mila in Montreal, Online, 22 February, 2023
- “Out-of-distribution Detection Theory”, TechBeat, Online, 22 February, 2023
- “Out-of-distribution Detection Theory”, TrustML young scientist seminars, Riken, Online, 08 February, 2023
- “Open Set Domain Adaptation: Theoretical Bound and Algorithm”, AAIL Day Presentation, University of Technology Sydney, Sydney, Australia, Online, 05 November, 2020

Professional Activities

- **Member** of the Institute of Electrical and Electronics Engineers (IEEE)
- **Area Chair** of ACMMM 2024&2025 (CCF A conference)
- **Area Chair** of NeurIPS 2024&2025 (CCF A conference)
- **Area Chair** of ACML 2025
- **Associate Editor** of Neural Networks
- Journal Reviewers for
IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE-TPAMI)
International Journal of Computer Vision (IJCV)
IEEE Transactions on Image Processing (IEEE-TIP)
IEEE Transactions on Neural Networks and Learning Systems (IEEE-TNNLS)
IEEE Transactions on Fuzzy Systems (IEEE-TFS)
IEEE Transactions Systems, Man and Cybernetics: Systems (IEEE-SMCS)
IEEE Network Magazine
IEEE Transactions on Emerging Topics in Computational Intelligence (IEEE-TETCI)
Knowledge-Based Systems (KBS)
Transactions on Machine Learning Research (TMLR)
International Journal of Computational Intelligence Systems (IJCI)
Neural Networks (NEUNET)
- Conference Program Committee Members (Reviewers) for
Conference on Neural Information Processing Systems (NeurIPS 2022-2023)
International Conference on Machine Learning (ICML 2022-2025)
International Conference on Learning Representations (ICLR 2023-2025)
Association for the Advancement of Artificial Intelligence (AAAI 2022-2024)
International Joint Conferences on Artificial Intelligence (IJCAI 2022-2024)
Conference on Computer Vision and Pattern Recognition (CVPR 2022-2023)
International Conference on Computer Vision (ICCV 2023)
European Conference on Computer Vision (ECCV 2022)
International Joint Conference on Neural Networks (IJCNN 2022-2023)
IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2023)
- Conference Meta Reviewers for IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2023)

Collaboration

Dr. Fang has received very good support to work closely with leading researchers and organisations around the world to share knowledge and exchange ideas with many researchers in Zhen's research fields.

Collaborator:

- Dr. Tongliang Liu, Associate Professor, Director of Sydney AI Centre, ARC Future Fellow, The University of Sydney, Australia;

- Dr. Sharon Yixuan Li, Assistant Professor, NSF Career Award, The University of Wisconsin Madison, United States;
- Dr. Bo Han, Assistant Professor of Computer Science, Director of Trustworthy Machine Learning and Reasoning Group, Hong Kong Baptist University, China;
- Dr. Feng Liu, Assistant Professor, ARC DECRA Fellow, The University of Melbourne, Australia.

Selected Publication List

From 2019 to the present, Dr. Fang has accrued 1833+ citations, a h-index of 21, and an i10-index of 27, underscoring the impact and quality of Dr. Fang's research.

Selected Publications—Conference (+: Co-first author; *: Corresponding author)

1. **Zhen Fang**, Yixuan Li, Jie Lu, Jiahua Dong, Bo Han, Feng Liu. Is Out-of-distribution Detection Learnable? *Conference on Neural Information Processing Systems 2022* (NeurIPS). [CCF A] –the **top-tier** conference in artificial intelligence and machine learning with **h5-index 278** (Ranking 1-2 among machine learning conferences). **Outstanding Paper Award**.
2. **Zhen Fang**, Jie Lu, Anjin Liu, Feng Liu, Guangquan Zhang. Learning Bounds for Open-Set Learning. *International Conference on Machine Learning 2021* (ICML). [CCF A] –the **top-tier** conference in artificial intelligence and machine learning with **h5-index 237** (Ranking 3 among machine learning conferences).
3. Xuefeng Du, **Zhen Fang**⁺, Ilias Diakonikolas, Yixuan Li. How Does Wild Data Provably Help OOD Detection? *International Conference on Learning Representations 2024* (ICLR). [Tsinghua A] –the **top-tier** conference in artificial intelligence and machine learning with **h5-index 303** (Ranking 1-2 among machine learning conferences).
4. Qizhou Wang, **Zhen Fang**⁺, Yonggang Zhang, Feng Liu, Yixuan Li, Bo Han. Learning to Augment Distributions for Out-of-distribution Detection. *Conference on Neural Information Processing Systems 2023* (NeurIPS). [CCF A] –the **top-tier** conference in artificial intelligence and machine learning with **h5-index 278** (Ranking 1-2 among machine learning conferences).
5. Jiahua Dong, **Zhen Fang**⁺, Anjin Liu, Gan Sun, Tongliang Liu. Confident Anchor-Induced Multi-Source Free Domain Adaptation. *Conference on Neural Information Processing Systems 2021* (NeurIPS). [CCF A] –the **top-tier** conference in artificial intelligence and machine learning with **h5-index 278** (Ranking 1-2 among machine learning conferences).
6. Li Zhong, **Zhen Fang**⁺, Feng Liu, Jie Lu, Bo Yuan, Guangquan Zhang. How does the Combined Risk Affect the Performance of Unsupervised Domain Adaptation Approaches?. *Association for the Advancement of Artificial Intelligence 2021* (AAAI). [CCF A] – the **top-tier** conference in artificial intelligence with **h5-index 180** (Ranking 4 among artificial intelligence conferences).
7. Bo Peng, **Zhen Fang**^{*}, Guangquan Zhang, Jie Lu. Knowledge Distillation with Auxiliary Variable. *International Conference on Machine Learning 2024* (ICML). [CCF A] –the **top-tier** conference in artificial intelligence and machine learning with **h5-index 237** (Ranking 3 among machine learning conferences).
8. Changdae Oh, **Zhen Fang**, Shawn Im, Xuefeng Du, Yixuan Li. Understanding Multimodal LLMs Under Distribution Shifts: An Information-Theoretic Approach. *International Conference on Machine Learning 2025* (ICML). [CCF A] – the **top-tier** conference in artificial intelligence and machine learning with **h5-index 237** (Ranking 3 among machine learning conferences).
9. Mengyue Yang, **Zhen Fang**, Yonggang Zhang, Yali Du, Furui Liu, Jean-Francois Ton, Jun Wang. Invariant Learning via Probability of Sufficient and Necessary Causes. *Conference on Neural Information Processing Systems 2023* (NeurIPS). [CCF A] –the **top-tier** conference in artificial intelligence and machine learning with

h5-index 278 (Ranking 1-2 among machine learning conferences). **Spotlight Paper.**

10. Xinheng Wu, Jie Lu, **Zhen Fang***, Guangquan Zhang. Meta OOD Learning For Continuously Adaptive OOD Detection. *International Conference on Computer Vision 2023 (ICCV)*. [CCF A] – a **top-tier** conference in artificial intelligence and computer version with **h5-index 228** (Ranking 2 among computer version conferences).

11. Ran Wang, Hua Zuo, **Zhen Fang***, Jie Lu. Towards Robustness Prompt Tuning with Fully Test-Time Adaptation for CLIP’s Zero-Shot Generalization. *ACM Multimedia 2024*. [CCF A] – a **top-tier** conference in artificial intelligence and multimedia.

12. Bo Peng, Yadan Luo, Yonggang Zhang, Yixuan Li, **Zhen Fang***. ConjNorm: Tractable Density Estimation for Out-of-Distribution Detection. *International Conference on Learning Representations 2024 (ICLR)*. [Tsinghua A] –the **top-tier** conference in artificial intelligence and machine learning with **h5-index 303** (Ranking 1-2 among machine learning conferences).

13. Duzhen Zhang, Wei Cong, Jiahua Dong, Yahan Yu, Xiuyi Chen, Yonggang Zhang, **Zhen Fang**. Continual Named Entity Recognition without Catastrophic Forgetting. *Empirical Methods in Natural Language Processing (EMNLP)*. [CCF B] – a **top-tier** conference in artificial intelligence and natural language processing (Ranking 1-3 among natural language processing conferences).

14. Bo Peng, Jie Lu, Guangquan Zhang, **Zhen Fang***. On the Provable Importance of Gradients for Language-Assisted Image Clustering. *International Conference on Computer Vision 2025 (ICCV)*. [CCF A] – a **top-tier** conference in artificial intelligence and computer version with **h5-index 228** (Ranking 2 among computer version conferences).

15. Kuo Shi, Jie Lu, Shanshan Ye, Guangquan Zhang, **Zhen Fang***. MiraGe: Multimodal Discriminative Representation Learning for Generalizable AI-Generated Image Detection. *ACM Multimedia 2025*. [CCF A] – a **top-tier** conference in artificial intelligence and multimedia.

16. Bo Peng, Jie Lu, Guangquan Zhang, **Zhen Fang***. Distributional Prototype Learning for Out-of-distribution Detection. *In 31st SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2025)*, [CCF A] – a **top-tier** conference in artificial intelligence and data mining.

Selected Publications—Journal (+: Co-first author)

1. **Zhen Fang**, Yixuan Li, Feng Liu, Bo Han, Jie Lu, On the Learnability of Out-of-distribution Detection. *Journal of Machine Learning Research (JMLR)*, published online, 2024. [CCF A] – the **top-tier** journal in machine learning (Ranking 1-3 among machine learning and artificial intelligence journals).

2. **Zhen Fang**, Jie Lu, Feng Liu, Guangquan Zhang, Semi-supervised Heterogeneous Domain Adaptation: Theory and Algorithm. *IEEE Transactions on Pattern Analysis and Machine Learning (IEEE-TPAMI)*, to appear, 2022. [CCF A] – the **top-tier** journal in artificial intelligence with **impact factor 23.6** (Ranking 1-3 among machine learning and artificial intelligence journals).

3. **Zhen Fang**, Jie Lu, Feng Liu, Junyu Xuan, Guangquan Zhang. Open Set Domain Adaptation Theoretical Bound and Algorithm. *IEEE Transactions on Neural Networks and Learning Systems (IEEE-TNNLS)*, to appear, 2021. [CCF B] – a **top-tier** journal in artificial intelligence with **impact factor 10.4**.

4. **Zhen Fang**, Jie Lu, Guangquan Zhang. An Extremely Simple Algorithm for Source Domain Reconstruction. *IEEE Transactions on Cybernetics (IEEE-TCYB)*, to appear, 2023. [CCF B] – a **top-tier** journal in artificial intelligence with **impact factor 11.8**.

5. **Zhen Fang**, Jie Lu, Guangquan Zhang. Out-of-distribution Detection with Non-semantic Exploration. *Information Sciences*, to appear, 2025.– a **top-tier** journal in artificial intelligence with **impact factor 8.1**.

6. Li Zhong, **Zhen Fang**⁺, Feng Liu, Bo Yuan, Guangquan Zhang, Jie Lu. Bridging the Theoretical Bound and Deep Algorithms for Open Set Domain Adaptation. *IEEE Transactions on Neural Networks and Learning Systems* (IEEE-TNNLS), to appear, 2020. [CCF B] – a **top-tier** journal in artificial intelligence with **impact factor 10.4**.
7. Xuhui Li, **Zhen Fang**, Yonggang Zhang, Ning Ma, Jiajun Bu, Bo Han, and Haishuai Wang. Characterizing Submanifold Region for Out-of-Distribution Detection. *IEEE Transactions on Knowledge and Data Engineering* (IEEE-TKDE), accepted 2024. [CCF A] – a **top-tier** journal in artificial intelligence and computer version with **impact factor 8.9**.
8. Jun Nie, Yadan Luo, Shanshan Ye, Yonggang Zhang, Xinmei Tian, **Zhen Fang**. Out-of-Distribution Detection with Virtual Outlier Smoothing. *International Journal of Computer Vision* (IJCV), accepted 2024. [CCF A] – a **top-tier** journal in artificial intelligence and computer version with **impact factor 14.5**.