Feng Liu

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Summary

Research Goal – I am a machine learning researcher with research interests in trustworthy machine learning and hypothesis testing. My long-term goal is to develop trustworthy intelligent systems that can learn reliable knowledge from massive related but different domains automatically. Researching trustworthy machine learning and hypothesis testing is the first step for achieving my long-term goal.

Current Position and Degree – I am currently an ARC DECRA Fellow and an Assistant Professor in Machine Learning at the School of Computing and Information Systems, The University of Melbourne, Australia. I am also a Visiting Scientist at RIKEN-AIP, Japan, and a Visting Fellow at the Australian Artificial Intelligence Institute, University of Technology Sydney (UTS). I was the recipient of the Australian Laureate postdoctoral fellowship. I received my Ph.D. degree in computer science at UTS in 2020, advised by Dist. Prof. Jie Lu and Prof. Guangquan Zhang.

Professional Activities – I am the organizer of the Workshop on Weakly Supervised Learning (2021 and 2022). I have served as an area chair (AC) for top-tier machine learning conferences ICML and ICLR, a senior program committee (SPC) member for IJCAI, ECAI, AJCAI, and program committee (PC) members for top-tier machine-learning and data-mining conferences: NeurIPS, ICML, ICLR, AISTATS, and KDD. I also serve as an Editor for ACM Transactions on Probabilistic Machine Learning, Associate Editor for the International Journal of Machine Learning and Cybernetics, Action Editor for Neural Networks, and reviewer for many academic journals, such as JMLR, IEEE-TPAMI, IEEE-TNNLS, IEEE-TFS and so on. I received the Outstanding Reviewer Award of NeurIPS (2021) and the Outstanding Reviewer Award of ICLR (2021) for outstanding service.

International Collaborations – I was a research intern with the AI Residency Program at RIKEN Center for Advanced Intelligence Project (RIKEN-AIP), working on the robust domain adaptation project with Prof. Masashi Sugiyama (Japan), Dr. Gang Niu (Japan), and Dr. Bo Han (HK SAR, China). I visited Gatsby Computational Neuroscience Unit at UCL and worked on the hypothesis testing project with Prof. Arthur Gretton (UK), Dr. Danica J. Sutherland (Canada), and Dr. Wenkai Xu (Germany). Currently, I actively work with them.

Publications and Awards – I have published 66 papers including 32 peer-reviewed journal papers (including 7 highly-cited papers), 32 peer-reviewed CORE Tier A*/A conference papers (including 23 top-tier machine-learning and artificial-intelligence conference papers: 9 NeurIPS (**three spotlight papers**, **one outstanding paper**), 8 ICML, 3 ICLR (**two spotlight**), 1 KDD, 1 AAAI, 1 IJCAI) and 1 peer-reviewed book chapter. These papers have received over $3,000$ citations (Source: Google Scholar). My *H-index* is 30 and *i10-index* is 43. I received the **ARC Discovery Early Career Researcher Award (2024)**, the Best Research-in-Progress Paper Runner-up Award of ECIS (2023), the **Outstanding Paper Award of NeurIPS (2022)**, UTS Best Thesis Award (Dean's list, 2021), and the Best Student Paper Award of FUZZ-IEEE (2019).

Students Supervision – I have been supervising/co-supervising eighteen PhD students and supervised six research students, where I am the main supervisor of six students and co-supervisor of the other students. Until now, they have completed **32** academic papers, where **20** papers have been published in CORE Tier **A*** conferences or CORE&ERA Tier **A*** journals.

Grants – As leading chief investigator/chief investigators, I have been involved in eight projects, and the total amount of the eight projects is **4.95 million** Australian Dollars (including **one ARC DP project**, **one ARC DECRA project**, **one NSF-CSIRO project**, **one CSIRO Next Generation project**, and **one DSTG project**).

Education

2016-2020 Doctoral Degree in Computer Science
- Title: *Towards Realistic Transfer Learning Methods: Theory and Algorithms*
Supervisor: Prof. Guangquan Zhang, Dist. Prof. Jie Lu
University: University of Technology Sydney, Australia

2013-2015 Master Degree in Probability Theory and Statistics (by Research)
- Title: *Time Series Interpolation and Prediction for the Electricity Market*
Supervisor: Prof. Jianzhou Wang
University: Lanzhou University, China
- Note: *Graduation in advance due to the research excellence (3 years for normal)*

2009-2013 Bachelor Degree in Pure Mathematics
- Lanzhou University, Lanzhou (China)

Positions

2023.07-now Lecturer in Machine Learning
- School of Computing and Information Systems
- The University of Melbourne, Australia

2021.07-*now* Visiting Scientist
- Imperfect Information Learning Team
- RIKEN Center for Advanced Intelligence Project, Japan

2022.05-2023.07 Lecturer in Statistics (Data Science)
- School of Mathematics and Statistics
- The University of Melbourne, Australia

2020.05-2022.05 Australian Laureate Postdoctoral Fellowship - Working on Autonomous Learning
- Australian Artificial Intelligence Institute
- University of Technology Sydney, Australia
- Working with Australian Laureate Fellow, Distinguished Professor Jie Lu

2019.08-11 Visiting Researcher - Working on Non-parametric Two Sample Test
- Gatsby Computational Neuroscience Unit
- University College London (UCL), United Kingdom
- Working with Prof. Arthur Gretton (UCL, UK) and Dr. Danica J. Sutherland (TTIC, USA)
- Designing a new nonparametric two sample test method via deep kernels.

2019.04-07 Research Intern - Working on Wildly Unsupervised Domain adaptation
- Imperfect Information Learning Team
- RIKEN Center for Advanced Intelligence Project, Japan
- Working with Prof. Masashi Sugiyama, Dr. Gang Niu and Dr. Bo Han
- Developing a novel unsupervised domain adaptation methods when source domain contains noisy labels.

2015-2016 Research Assistant - Working on Time Series Interpolation and Prediction
- Statistical Science Institute, School of Statistics
- Dongbei University of Finance and Economics, China
- Working with Prof. Ping Jiang (Head of School of Statistics)
- Developing computational intelligence methods (i.e., feature selection, neural networks, evolutionary algorithms) to predict time series, i.e.,

wind speed, electricity load and PM2.5/10.
- Designing a new fractal interpolation methods to address missing values in the time series.

2014.05-08 Research Assistant - Working on Long-Term Wind Power Prediction
- State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG)
- The Institute of Atmospheric Physics (IAP)
- Chinese Academy of Science (CAS), China
- Working with Senior Scientist Zhenhai Guo (Director of LASG)
- Applying fuzzy logic and evolutionary algorithms to correct wind speed predicted by the Weather Research Forecasting (WRF).

Research Focus

- Trustworthy Machine Learning; Hypothesis Testing; Transfer Learning.

Advising

I am the main supervisor of the following six students (on-going).

- Mr. Ruijiang Dong (PhD@UniMelb), on the topic: Foundation-model-based transfer learning;
- Mr. Jinhao Li (PhD@UniMelb), on the topic: Foundation-model-based transfer learning;
- Mr. Jiacheng Zhang (PhD@UniMelb), on the topic: Learning from imprecise observations;
- Miss Chengyi Cai (PhD@UniMelb), on the topic: Foundation-model-based transfer learning;
- Mr. Xunye Tian (PhD@UniMelb), on the topic: Data-adaptive Hypothesis Testing;
- Mr. Yiyi Guo (PhD@UniMelb), on the topic: Machine learning for Meteorology.

I am co-supervising the following students.

- Mr. Wenjie Wang (PhD@UniMelb), on the topic: Learning causal representations;
- Mr. Guangzheng Hu (PhD@UniMelb), on the topic: Statistical learning with noisy labels;
- Miss Xinyu Su (PhD@UniMelb), on the topic: Machine learning for transportation;
- Mr. Qizhou Wang (PhD@HKBU), on the topic: Trustworthy machine learning;
- Mr. Haoang Chi (Visiting PhD@HKBU), on the topic: Foundation-model-based transfer learning;
- Miss Xue Jiang (PhD@HKBU), on the topic: Trustworthy machine learning;
- Mr. Shuhai Zhang (Visiting PhD@HKBU), on the topic: Trustworthy machine learning;
- Mr. Xiong Peng (PhD@HKBU), on the topic: Trustworthy machine learning;
- Mr. Guangzhi Ma (PhD@UTS), on the topic: Learning from imprecise observations;
- Mr. Ke Liu (PhD@ZJU), on the topic: Image generation and representation;
- Mr. Hongduan Tian (PhD@HKBU), on the topic: Few-shot learning;
- Miss Yongfeng Zhang (PhD@HKPolyU), on the topic: Foundation-model-based transfer learning.

I co-supervised the following students (alumni).

- Mr. Ning Ma (PhD@ZJU), on the topic: Trustworthy machine learning;
- Mr. Yicheng Wang (PhD@XJTU), on the topic: Trustworthy machine learning;

- Miss Chenghong Zhou (PhD@HKBU), on the topic: Trustworthy machine learning;
- Miss Yiyang Zhang (Visiting Master@UTS), on the topic: Towards realistic transfer learning;
- Mr. Li Zhong (Visiting Master@UTS), on the topic: Towards realistic transfer learning;
- Mr. Ruize Gao (Undergraduate RA@HKBU), on the topic: Trustworthy machine learning.

Grants Regarding Responsible AI

- **RESILIENCE: Graph Representation Learning for Fair Teaming in Crisis Response**

  Chief Investigators - Yizhou Sun, Ying Ding, Yi Zhang, **Feng Liu**.
  Duration - 2023.06∼2026.06
  Amount - *approximate* AUD$1,500,000
  Supported by - National Science Foundation (NSF) and CSIRO
  Grant No. - 2303037

- **AI-empowered privacy and ethics risk assessment tool**

  Chief Investigators - George Tian, Yi Zhang, Yiliao Song, **Feng Liu**.
  Duration - 2022.07∼2023.07
  Amount - AUD$15,000
  Supported by - The University of Technology Sydney
  Grant No. - PRO2215246

Grants Regarding Trustworthy Machine Learning

- **Adversarial Reinforcement Learning: Attacks and Defences**

  Chief Investigators - Ben Rubinstein, Andrew Cullen, Chris Leckie, Sarah Erfani,
  Chief Investigators - Tansu Alpcan, **Feng Liu**.
  Duration - 2024.01∼2026.7
  Amount - AUD$1,250,188
  Supported by - Defence Science and Technology Group (DSTG)
  Grant No. - 11447

- **Trustworthy Hypothesis Transfer Learning**

  Chief Investigators - **Feng Liu**.
  Duration - 2024.01∼2026.12
  Amount - AUD$436,847 + AUD$50,000 (Support from Uni)
  Supported by - Australian Research Council (ARC)
  Grant No. - DE240101089

- **Advanced Machine Learning via Bi-level Optimization**

  Chief Investigators - Guangquan Zhang, **Feng Liu**, Hua Zuo.
  Duration - 2023.01∼2025.12
  Amount - AUD$480,000
  Supported by - Australian Research Council (ARC)
  Grant No. - DP230101540

Grants Regarding AI for Science

- **AI for Next Generation Food & Waste Systems**

  Chief Investigators - Andy Song, Benu Adhikari, Samantha Richardson, Huong Ha,
  Chief Investigators - Wei Xiang, **Feng Liu**.
  Duration - 2024.4∼2027.10
  Amount - AUD$1,200,000
  Supported by - CSIRO Next Generation Graduated Program
  Grant No. - TBA

- **Production Optimisation for more Sustainable Wineries and Breweries**

  Chief Investigators - Tingru Cui, Lu Aye, Philip Christopher **Feng Liu**.
  Duration - 2024.1∼2024.12
  Amount - AUD$28,000
  Supported by - The University of Melbourne

- **Research on Key problem of Photovoltaics power**

  Chief Investigator - **Feng Liu**, Weiwei Qi, Hao Kang
  Duration - 2012.03∼2013.01
  Amount - RMB$20,000 (AUD$4,000)
  Supported by - National Undergraduate Innovation Discovery Project
  Grant No. - 201210730105

Professional Service

- **Member** of the Institute of Electrical and Electronics Engineers (IEEE) and IEEE Computational Intelligence Society (CIS)
- **Conference Workshop/Special Session Co-chair** of
  ACML 2022 Workshop on Weakly Supervised Learning (**Leading Chair**)
  IJCNN 2022 Special Session on Transfer Learning under Weak Supervision (**Leading Chair**)
  FUZZ-IEEE 2022 Special Session on Handling Uncertainty in Big Data by Fuzzy Systems (Co-chair)
  ACML 2021 Workshop on Weakly Supervised Learning (Co-chair)
  FUZZ-IEEE 2021 Special Session on Handling Uncertainty in Big Data by Fuzzy Systems (Co-chair)
- **Conference Session Chair** of
  Federated Learning and Transfer Learning in ACML2021
  Machine Learning (Classification and Regression 2/2) in ECAI2020
  Machine Learning (Dimensionality Reduction and Manifold Learning) in IJCAI2020
- **Conference Area Chair** of
  International Conference on Machine Learning (ICML)
  International Conference on Learning Representations (ICLR)
  Association for Computing Machinery (ACM) Multimedia (ACMMM)
  Australasian Joint Conference on Artificial Intelligence (AJCAI)
- **Conference Senior PC member** of
  European Conference on Artificial Intelligence (ECAI)
  International Joint Conference on Artificial Intelligence (IJCAI)
- **Conference PC member** of
  Neural Information Processing Systems (NeurIPS)
  International Conference on Machine Learning (ICML)
  International Conference on Learning Representations (ICLR)
  International Conference on Artificial Intelligence and Statistics (AISTATS)
  Conference on Uncertainty in Artificial Intelligence (UAI)
  ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)
  Asian Conference on Machine Learning (ACML)
  AAAI Conference on Artificial Intelligence (AAAI)
  International Joint Conference on Artificial Intelligence (IJCAI)
- **Journal Editor** for
  Neural Networks
  ACM Transactions on Probabilistic Machine Learning
  International Journal of Machine Learning and Cybernetics
- **Journal Reviewer** for
  Journal of Machine Learning Research
  Machine Learning Journal

IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Neural Networks and Learning Systems
IEEE Transactions on Big Data

Publications (* Corresponding author, †Equal contribution)

Ten Representative works:

1. **Feng Liu**†, Wenkai Xu†, Jie Lu, Danica J. Sutherland.
Meta Two-Sample Testing: Learning Kernels for Testing with Limited Data.
In *Advances in Neural Information Processing Systems* (NeurIPS), online, 2021.

2. **Feng Liu**†, Wenkai Xu†, Jie Lu, Guangquan Zhang, Arthur Gretton, Danica J. Sutherland.
Learning Deep Kernels for Nonparametric Two-Sample Test.
In *Proceedings of the 37th International Conference on Machine Learning* (ICML), online, 2020.

3. **Feng Liu**, Guangquan Zhang, Jie Lu.
A Novel Fuzzy Neural Network for Unsupervised Domain Adaptation in Heterogeneous Scenarios.
In *Proceedings of the 2019 IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE), pp. 1-6, New Orleans, USA, 2019.
[Best Student Paper Award]

4. Xue Jiang, **Feng Liu**, Zhen Fang, Hong Chen, Tongliang Liu, Feng Zheng, Bo Han.
Negative Label Guided OOD Detection with Pretrained Vision-Language Models.
In *International Conference on Learning Representations* (ICLR), 2024.
[Spotlight]

5. Qizhou Wang†, **Feng Liu**†, Yonggang Zhang, Jing Zhang, Chen Gong, Tongliang Liu, Bo Han.
Watermarking for Out-of-distribution Detection.
In *Advances in Neural Information Processing Systems* (NeurIPS), 2022.
[Spotlight]

6. Haoang Chi†, **Feng Liu**†, Bo Han, Wenjing Yang, Long Lan, Tongliang Liu, Gang Niu, Mingyuan Zhou, Masashi Sugiyama.
Meta Discovery: Learning to Discover Novel Classes given Very Limited Data.
In *International Conference on Learning Representations* (ICLR), 2022.
[Spotlight]

7. Haoang Chi†, **Feng Liu**†, Wenjing Yang, Long Lan, Tongliang Liu, Bo Han, William Cheung, James T. Kwok,
TOHAN: A One-step Approach towards Few-shot Hypothesis Adaptation.
In *Advances in Neural Information Processing Systems* (NeurIPS), 2021.
[Spotlight]

8. Ruize Gao†, **Feng Liu**†, Jingfeng Zhang†, Bo Han, Tongliang Liu, Gang Niu, Masashi Sugiyama,
Maximum Mean Discrepancy is Aware of Adversarial Attacks.
In *Proceedings of the 38th International Conference on Machine Learning* (ICML), online, 2021.

9. Yiliao Song, Tingru Cui, **Feng Liu**.
Designing Fair AI Systems: How Explanation Specificity Influences Users' Perceived Fairness and Trusting Intentions.
In *European Conference on Information Systems* (ECIS), 2023.
[Best RiP Paper Runner-up Award]

10. Zhen Fang, Yixuan Li, Jie Lu, Jiahua Dong, Bo Han, **Feng Liu***.
Is Out-of-distribution Detection Learnable?.
In *Advances in Neural Information Processing Systems* (NeurIPS), 2022.
[Outstanding Paper]

Conference papers:

1. Xue Jiang, **Feng Liu**, Zhen Fang, Hong Chen, Tongliang Liu, Feng Zheng, Bo Han.
   Negative Label Guided OOD Detection with Pretrained Vision-Language Models.
   In *International Conference on Learning Representations* (ICLR), 2024.
   [Spotlight]

2. Xilie Xu, Jingfeng Zhang, **Feng Liu**, Masashi Sugiyama, Mohan Kankanhalli.
   Efficient Adversarial Contrastive Learning via Robustness-Aware Coreset Selection.
   In *Advances in Neural Information Processing Systems* (NeurIPS), 2023.
   [Spotlight]

3. Xilie Xu, Jingfeng Zhang, **Feng Liu**, Masashi Sugiyama, Mohan Kankanhalli.
   Enhancing Adversarial Contrastive Learning via Adversarial Invariant Regularization.
   In *Advances in Neural Information Processing Systems* (NeurIPS), 2023.

4. Haotian Zheng, Qizhou Wang, Zhen Fang, Xiaobo Xia, **Feng Liu**, Tongliang Liu, Bo Han.
   Out-of-distribution Detection Learning with Unreliable Out-of-distribution Sources.
   In *Advances in Neural Information Processing Systems* (NeurIPS), 2023.

5. Qizhou Wang, Zhen Fang, Yonggang Zhang, **Feng Liu**, Yixuan Li, Bo Han.
   Learning to Augment Distributions for Out-of-distribution Detection.
   In *Advances in Neural Information Processing Systems* (NeurIPS), 2023.

6. Tingru Cui, Yixuan Li, Kaiping Chen, James Bailey, **Feng Liu**.
   Designing Fair AI Systems: Exploring the Interaction of Explainable AI and Task Objectivity on Users' Fairness Perception.
   In *Pacific Asia Conference on Information Systems* (PACIS), 2023.

7. Ruijiang Dong†, **Feng Liu**†, Haoang Chi, Tongliang Liu, Mingming Gong, Gang Niu, Masashi Sugiyama, Bo Han.
   Diversity-enhancing Generative Network for Few-shot Hypothesis Adaptation.
   In *International Conference on Machine Learning* (ICML), 2023.

8. Shuhai Zhang†, **Feng Liu**†, Jiahao Yang, Yifan Yang, Changsheng Li, Bo Han, Mingkui Tan.
   Detecting Adversarial Data by Probing Multiple Perturbations Using Expected Perturbation Score.
   In *International Conference on Machine Learning* (ICML), 2023.

9. Xue Jiang, **Feng Liu**, Zhen Fang, Hong Chen, Tongliang Liu, Feng Zheng, Bo Han.
   Detecting Out-of-distribution Data through In-distribution Class Prior.
   In *International Conference on Machine Learning* (ICML), 2023.

10. Yiliao Song, Tingru Cui, **Feng Liu**.
    Designing Fair AI Systems: How Explanation Specificity Influences Users' Perceived Fairness and Trusting Intentions.
    In *European Conference on Information Systems* (ECIS), 2023.
    [Best RiP Paper Runner-up Award]

11. Qizhou Wang, Junjie Ye, **Feng Liu**, Quanyu Dai, Marcus Kalander, Tongliang Liu, Jianye HAO, Bo Han.
    Out-of-distribution Detection with Implicit Outlier Transformation.
    In *International Conference on Learning Representations* (ICLR), 2023.

12. Zhen Fang, Yixuan Li, Jie Lu, Jiahua Dong, Bo Han, **Feng Liu***.
    Is Out-of-distribution Detection Learnable?.
    In *Advances in Neural Information Processing Systems* (NeurIPS), 2022.
    [Outstanding Paper]

13. Qizhou Wang†, **Feng Liu**†, Yonggang Zhang, Jing Zhang, Chen Gong, Tongliang Liu, Bo Han.
    Watermarking for Out-of-distribution Detection.
    In *Advances in Neural Information Processing Systems* (NeurIPS), 2022.
    [Spotlight]

14. Xiong Peng†, **Feng Liu**†, Jingfeng Zhang, Long Lan, Junjie Ye, Tongliang Liu, Bo Han.
Bilateral Dependency Optimization: Defending Against Model-inversion Attacks.
In *ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (KDD), 2022.

15. Ruize Gao, Jiongxiao Wang, Kaiwen Zhou, **Feng Liu**, Binghui Xie, Gang Niu, Bo Han, James Cheng.
Fast and Reliable Evaluation of Adversarial Robustness with Minimum-Margin Attack.
In *International Conference on Machine Learning* (ICML), 2022.

16. Xilie Xu, Jingfeng Zhang, **Feng Liu**, Masashi Sugiyama, Mohan Kankanhalli.
Adversarial Attacks and Defense for Non-Parametric Two-Sample Tests.
In *International Conference on Machine Learning* (ICML), 2022.

17. Haoang Chi†, **Feng Liu**†, Bo Han, Wenjing Yang, Long Lan, Tongliang Liu, Gang Niu, Mingyuan Zhou, Masashi Sugiyama.
Meta Discovery: Learning to Discover Novel Classes given Very Limited Data.
In *International Conference on Learning Representations* (ICLR), 2022.
[Spotlight]

18. **Feng Liu**†, Wenkai Xu†, Jie Lu, Danica J. Sutherland.
Meta Two-Sample Testing: Learning Kernels for Testing with Limited Data.
In *Advances in Neural Information Processing Systems* (NeurIPS), 2021.

19. Haoang Chi†, **Feng Liu**†, Wenjing Yang, Long Lan, Tongliang Liu, Bo Han, William Cheung, James T. Kwok,
TOHAN: A One-step Approach towards Few-shot Hypothesis Adaptation,
In *Advances in Neural Information Processing Systems* (NeurIPS), 2021.
[Spotlight]

20. Qizhou Wang†, **Feng Liu**†, Bo Han, Tongliang Liu, Chen Gong, Mingyuan Zhou, Masashi Sugiyama,
Probabilistic Margins for Instance Reweighting in Adversarial Training,
In *Advances in Neural Information Processing Systems* (NeurIPS), 2021.

21. Ruize Gao†, **Feng Liu**†, Jingfeng Zhang†, Bo Han, Tongliang Liu, Gang Niu, Masashi Sugiyama,
Maximum Mean Discrepancy is Aware of Adversarial Attacks,
In *Proceedings of the 38th International Conference on Machine Learning* (ICML), online, 2021.

22. Zhen Fang†, Jie Lu, Anjin Liu†, **Feng Liu**, Guangquan Zhang,
Learning Bounds for Open-Set Learning,
In *Proceedings of the 38th International Conference on Machine Learning* (ICML), online, 2021.

23. Guangzhi Ma, **Feng Liu**, Guangquan Zhang, Jie Lu,
Learning from Imprecise Observations: An Estimation Error Bound based on Fuzzy Random Variables,
In *Proceedings of the 2021 IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE), online, 2021.

24. Li Zhong†, Zhen Fang†, **Feng Liu**†, Bo Yuan, Guangquan Zhang, Jie Lu,
How does the Combined Risk Affect the Performance of Unsupervised Domain Adaptation Approaches?,
In *the 35th AAAI Conference on Artificial Intelligence* (AAAI), online, 2021.

25. **Feng Liu**†, Wenkai Xu†, Jie Lu, Guangquan Zhang, Arthur Gretton, Danica J. Sutherland.
Learning Deep Kernels for Nonparametric Two-Sample Test.
In *Proceedings of the 37th International Conference on Machine Learning* (ICML), online, 2020.

26. Yiyang Zhang†, **Feng Liu**†, Zhen Fang†, Bo Yuan, Guangquan Zhang, Jie Lu,
Clarinet: A One-step Approach Towards Budget-friendly Unsupervised Domain Adaptation,
In *Proceedings of the 29th International Joint Conference on Artificial Intelligence* (IJCAI), online, 2021.

27. **Feng Liu**, Guangquan Zhang, Jie Lu,
A Novel Non-parametric Two-Sample Test on Imprecise Observations,
In *Proceedings of the 2020 IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE), online, 2020.

28. **Feng Liu**, Jie Lu, Bo Han, Gang Niu, Guangquan Zhang, Masashi Sugiyama.
Butterfly: A Panacea for All Difficulties in Wildly Unsupervised Domain Adaptation,
In *NeurIPS Workshop on Learning Transferable Skills*, pp. 1-8, Vancouver, Canada, 2019.

29. **Feng Liu**, Guangquan Zhang, Jie Lu.
A Novel Fuzzy Neural Network for Unsupervised Domain Adaptation in Heterogeneous Scenarios,
In *Proceedings of the 2019 IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE), pp. 1-6, New Orleans, USA, 2019.
[Best Student Paper Award]

30. **Feng Liu**, Guangquan Zhang, Jie Lu.
Unconstrained fuzzy feature fusion for heterogeneous unsupervised domain adaptation,
In *Proceedings of the 2018 IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE), pp. 1-8, Rio de Janeiro, Brazil, 2018.

31. **Feng Liu**, Guangquan Zhang, Jie Lu.
Heterogeneous unsupervised domain adaptation based on fuzzy feature fusion,
In *Proceedings of the 2017 IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE), pp. 1-6, Naples, Italy, 2017.

32. Zhen Fang, Jie Lu, **Feng Liu**, Guangquan Zhang.
Unsupervised Domain Adaptation with Sphere Retracting Transformation,
In *Proceedings of the 2019 IEEE International Joint Conference on Neural Networks* (IJCNN), pp. 1-8, Budapest, Hungary, 2019.

Journal papers:

33. Haoang Chi†, Wenjing Yang†, **Feng Liu**†, Long Lan, Tao Qin, Bo Han.
Does Confusion Really Hurt Novel Class Discovery?,
International Journal of Computer Vision, 2024.

34. Zhixing Zhong, Junchen Hou, Zhixian Yao, Lei Dong, **Feng Liu**, Junqiu Yue, Tiantian Wu, Junhua Zheng, Gaoliang Ouyang, Chaoyong Yang, Jia Song.
Cancer-Finder: Domain generalization enables general cancer cell annotation in single-cell and spatial transcriptomics,
Nature Communications, 2024.

35. Xuping Feng, Zeyu Yu, Hui Fang, Hangjin Jiang, Guofeng Yang, Liting Chen, Xinran Zhou, Bing Hu, Chun Qin, Gang Hu, Guipei Xing, Boxi Zhao, Yongqiang Shi, Jiansheng Guo, **Feng Liu**, Bo Han, Bernd Zechmann, Yong He, Feng Liu.
Plantorganelle Hunter is an effective deep-learning-based method for plant organelle phenotyping in electron microscopy,
Nature Plants, 2023.

36. Chenhong Zhou†, **Feng Liu**†, Chen Gong, Rongfei Zeng, Tongliang Liu, William Cheung, Bo Han.
KRADA: Known-region-aware Domain Alignment for Open-set Domain Adaptation in Semantic Segmentation,
Transactions on Machine Learning Research, 2023.

37. Zhen Fang, Jie Lu, **Feng Liu***, Guangquan Zhang,
Semi-supervised Heterogeneous Domain Adaptation: Theory and Algorithms,
IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE-TPAMI), Early Access, 2023.
[**Highly-cited paper (from Web-of-Science)**]

38. Xiaoxu Guo, Fanghe Lin, Juan Song, Sun Di, Li Lin, Zhixing Zhong, Zhaorun Wu, Xiaoyu Wang, Yingkun Zhang, Jin Li, Huimin Zhang, **Feng Liu***, Jia Song, Chaoyong Yang.
Deep transfer learning enables lesion tracing of circulating tumor cells,
Nature Communications, 2022.

39. Guangzhi Ma, Jie Lu, **Feng Liu**, Zhen Fang, Guangquan Zhang,
Multi-class Classification with Fuzzy-feature Observations: Theory and Algorithms,
IEEE Transactions on Cybernetics (IEEE-TCYB), Early Access, 2022.

40. **Feng Liu**, Guangquan Zhang, Jie Lu*,
Multisource heterogeneous unsupervised domain adaptation via shared-fuzzy-equivalence-relation neural networks,

IEEE Transactions on Fuzzy Systems (IEEE-TFS), Vol. 29, no. 11, pp. 3308 - 3322, 2021.
[**Highly-cited paper (from Web-of-Science)**]

41. Yiyang Zhang[†], **Feng Liu**[†], Zhen Fang[†], Bo Yuan, Guangquan Zhang, Jie Lu,
Learning from a Compleme-ntary-label Source Domain: Theory and Algorithms,
IEEE Transactions on Neural Networks and Learning Systems (IEEE-TNNLS), Early Access, 2021.
[**Highly-cited paper (from Web-of-Science)**]

42. Li Zhong[†], Zhen Fang[†], **Feng Liu**[†], Yuan Bo, 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), Early Access, 2021.
[**Highly-cited paper (from Web-of-Science)**]

43. Shanshan Qin[†], Hao Ding[*,†], Yuehua Wu[†], **Feng Liu**[†],
High-dimensional sign-constrained feature selection and grouping,
Annals of the Institute of Statistical Mathematics (AISM), Vol. 73, pp. 787-819, 2021.

44. Fan Dong, Jie Lu, Yiliao Song, **Feng Liu**, Guangquan Zhang,
A Concept Drift Region-based Data Sample Editing Methodology,
IEEE Transactions on Cybernetics (IEEE-TCYB), Early Access, 2021.

45. **Feng Liu**, Guangquan Zhang, Jie Lu*,
Heterogeneous Domain Adaptation: An unsupervised approach,
IEEE Transactions on Neural Networks and Learning Systems (IEEE-TNNLS), Vol. 31, no. 12, pp. 5588 - 5602, 2020.
[**Highly-cited paper (from Web-of-Science)**]

46. Zhen Fang, Jie Lu*, **Feng Liu**, et al.,
Open Set Domain Adaptation: Theoretical Bound and Algorithm,
IEEE Transactions on Neural Networks and Learning Systems (IEEE-TNNLS), Vol. 32, no. 10, pp. 4309 - 4322, 2020.
[**Highly-cited paper (from Web-of-Science)**]

47. Hua Zuo, Jie Lu*, Guangquan Zhang, **Feng Liu**,
Fuzzy Transfer Learning Using an Infinite Gaussian Mixture Model and Active Learning,
IEEE Transactions on Fuzzy Systems (IEEE-TFS), Vol. 27, no. 2, pp. 291-303, 2019.

48. **Feng Liu**, Jie Lu*, Guangquan Zhang,
Unsupervised Heterogeneous Domain Adaptation via Shared Fuzzy Equivalence Relations,
IEEE Transactions on Fuzzy Systems (IEEE-TFS), Vol. 26, no. 6, pp. 3555-3568, 2018.

49. Anjin Liu, Jie Lu*, **Feng Liu**, Guangquan Zhang,
Accumulating regional density dissimilarity for concept drift detection in data streams,
Pattern Recognition (PR), Vol. 76, pp. 256-272, 2018.

50. Yi Zhang, Jie Lu*, **Feng Liu**, et al.,
Does deep learning help topic extraction? A kernel k-means clustering method with word embedding,
Journal of Informetrics (JOI), Vol. 12, no. 4, pp. 1099-1117, 2018.

51. Qian Zhang, Dianshuang Wu, Jie Lu*, **Feng Liu**, Guangquan Zhang,
A cross-domain recommender system with consistent information transfer,
Decision Support Systems (DSS), Vol. 104, pp. 49-63, 2017.

52. Jiang Ping, **Feng Liu***, Yiliao Song,
A hybrid forecasting model based on date-framework strategy and improved feature selection technology for short-term load forecasting,
Energy, Vol. 119, pp. 694-709, 2017.

53. Yiliao Song, Yong Wang*, **Feng Liu**, et al.,
Development of a hybrid model to predict construction and demolition waste: China as a case study,
Waste management, Vol. 59, No. 12, pp. 350-361, 2017.

54. Jiang Ping, **Feng Liu***, Yiliao Song,
Cuckoo search-designated fractal interpolation functions with winner combination for estimating missing values in time series,
Applied Mathematical Modelling, Vol. 40, No. 23-24, pp. 281-297, 2016.

55. Jianzhou Wang, **Feng Liu***, et al.,
A novel model: Dynamic choice artificial neural network (DCANN) for an electricity price forecasting system,
Applied Soft Computing, Vol. 48, pp. 281-297, 2016.

56. Jiang Ping, **Feng Liu***, Yiliao Song,
A Hybrid Multi-Step Model for Forecasting Day-Ahead Electricity Price Based on Optimization, Fuzzy Logic and Model Selection,
Energies, Vol. 9, No. 8, pp. 1-27, 2016.

57. Shanshan Qin, **Feng Liu***, et al.,
Spatial-temporal analysis and projection of extreme particulate matter (PM10 and PM2.5) levels using association rules: A case study of the Jing-Jin-Ji region, China,
Atmospheric Environment, Vol. 120, pp. 339-350, 2015.

58. Shanshan Qin, **Feng Liu***, et al.,
Analysis and forecasting of the particulate matter (PM) concentration levels over four major cities of China using hybrid models,
Atmospheric Environment, Vol. 98, pp. 665-675, 2015.

59. Shanshan Qin, **Feng Liu***, et al.,
Interval forecasts of a novelty hybrid model for wind speeds,
Energy Reports, Vol. 1, pp. 8-16, 2015.

60. Zhilong Wang, **Feng Liu***, et al.,
A hybrid forecasting model based on bivariate division and a back propagation artificial neural network optimized by chaos particle swarm optimization for day-ahead electricity price,
Abstract and Applied Analysis, Article Number: 249208, 2014.

61. Jing Zhao, Zhenhai Guo, Zhongyue Su, Zhiyuan Zhao, Xia Xiao, **Feng Liu***,
An improved multi-step forecasting model based on WRF ensembles and creative fuzzy systems for wind speed,
Applied Energy, Vol. 162, pp. 808-826, 2016.
[**Highly-cited paper (from Web-of-Science)**]

62. Jianzhou Wang, Yiliao Song*, **Feng Liu**, Ru Hou,
Analysis and application of forecasting models in wind power integration: A review of multi-step-ahead wind speed forecasting models,
Renewable and Sustainable Energy Reviews, Vol. 60, pp. 690-681, 2016.

63. Jianzhou Wang, Fanyong Zhang*, **Feng Liu**, Jianjun Ma,
Hybrid forecasting model-based data mining and genetic algorithm-adaptive particle swarm optimisation: a case study of wind speed time series,
IET Renewable Power Generation, Vol. 10, No. 3, pp. 287-298, 2016.

64. Yiliao Song, Shanshan Qin*, Jiansheng Qu, **Feng Liu**,
The forecasting research of early warning systems for atmospheric pollutants: A case in Yangtze River Delta region,
Atmospheric Environment, Vol. 118, pp. 58-69, 2015.

65. Jing Zhao, Jianzhou Wang*, **Feng Liu**,
Multistep forecasting for short-term wind speed using an optimized extreme learning machine network with decomposition-based signal filtering,
Journal of Energy Engineering, Vol. 142, No. 3, Article Number: 04015036, 2015.

Chapter paper:

66. Ping Jiang, **Feng Liu***, Yiliao Song,
Comparison Study of AI-based Methods in Wind Energy,
New Applications of Artificial Intelligence, InTech, 2016.

Working papers:

1. **Feng Liu**, Guangquan Zhang, Jie Lu,
A Knowledge-Ensemble Model for Heterogeneous Unsupervised Domain Adaptation,
IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE-TPAMI), 2023. (Revise&Resubmit)

Honors and Awards

- **2023** – FEIT Excellence Award in Early Career Research in University of Melbourne
- **2023** – **(Top 2%)** Top 2% of the world's most cited scientists in 2022
- **2023** – **(200 per year across all disciplines in Australia)** ARC Discovery Early Career Researcher Award
- **2023** – **(Top** 5**%)** Best Reseach-in-progress Paper Award of ECIS: 2nd Runner Up
- **2022** – **(Top** 0.1**%)** NeurIPS Outstanding Paper
- **2021** – **(Top** 8**%)** Outstanding Reviewer Award of NeurIPS 2021
- **2021** – **(Top** 10**%)** Outstanding Reviewer Award of ICLR 2021
- **2021** – **(12 in each faculty)** UTS Best Thesis Award (Dean's list)
- **2020** – **(Top** 10**%)** AAII Day Best Student Paper Award (2020)
- **2019** – **(Top 5)** UTS-FEIT HDR Research Excellence Award (2019)
- **2019** – **(Top 1)** Best student paper award from IEEE International Conference on Fuzzy Systems (*one paper per year over 500 more accepted papers*).
- **2014** – **(Top 5%)** Miyoshi Post-Graduate Award
- **2011** – **(Top 5%)** First-class Award scholarship of Research and Innovation of Lanzhou University.
- **2011** – **(Top 5%)** Meritorious Winner in the International Mathematical Contest in Modelling.