

Bingjie YAN

Trustworthy Federated Learning · Privacy-Preserving ML · AI for Healthcare · Edge Computing

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"Nothing is impossible."

Summary

I am a second-year master's student majoring in Artificial Intelligence, with a strong focus on **federated learning** and its applications in healthcare, particularly **multi-modal medical data analysis**. My research aims to develop robust, efficient, scalable, and privacy-preserving AI solutions for real-world healthcare applications. My previous work has primarily focused on **asynchronous federated learning** and **privacy-preserving** methods in the medical field. I am looking for a Ph.D position in 2025 fall.

Education

Institute of Computing Technology, Chinese Academy of Sciences

Beijing, China

Master of Engineering, Computer Science

2022.09 - Exp. 2025.06

- M.E., Asynchronous Federated Learning, Medical Application in FL. Advisor: Prof. Yiqiang Chen
- GPA: 87/100 (3.79/4)
- Main Courses: Algorithm Design and Analysis(96), Deep Learning(92), Pattern Recognition and Machine Learning(92), Intelligent Computing System(97), Practical Optimization Algorithm and Application(94), etc.

School of Computer Science and Technology, Hainan University

Hainan, China

Bachelor of Engineering, Software Engineering for Big data

2018.09 - 2022.06

- GPA: 89.69/100 (3.67/4), Ranking: 8/179
- Outstanding Graduate Awards (3%), School First-Class Academy Scholarship (3%)
- Main Courses: Linear Algebra(97), Data Structure(99), Advanced Mathematics(90), C++ Programming(96), Discrete Mathematics(90), etc.

Selected Publications

Note: Please refer to my Google Scholar for the complete list. The total #citations exceeds 250, and the h-index is 4.

- **KAMOF: K-Asynchronous Multi-objective Federated Learning with Privacy, Efficiency, and Utility Trade-offs.**
B. Yan, Y. Chen, Q. Chen, X. Jiang, Y. Kang and T. Zhang. (2024). The 33rd International Joint Conference on Artificial Intelligence (IJCAI'24, CCF-A). **Under review.**
- **Model Trip: Enhancing Privacy and Fairness in Model Fusion across Multi-Federations for Trustworthy Global Healthcare.**
Q. Chen, Y. Chen, B. Yan, X. Jiang, X. Zhang, Y. Kang, et al. (2024). The 40th IEEE International Conference on Data Engineering (ICDE'24, CCF-A). **Accepted.**
- **FedEYE: A Scalable and Flexible End-to-end Federated Learning Platform for Ophthalmology.**
B. Yan, D. Cao, X. Jiang, Y. Chen, W. Dai, et al. (2024). Cell Patterns (SCI, SJR-Q1, IF=6.5). **[PDF]**
- **AFL-CS: Asynchronous Federated Learning with Cosine Similarity-based Penalty Term and Aggregation.**
B. Yan, X. Jiang, Y. Chen, C. Gao and X. Liu. (2023). The 29th IEEE International Conference on Parallel and Distributed Systems (ICPADS'23, CCF-C, Oral). **Accepted.**
- **Experiments of Federated Learning for COVID-19 Chest X-ray Images.**
B. Yan, J. Wang, J. Cheng, et al. (2021). The 7th International Conference on Artificial Intelligence and Security (ICAIS'21, EI). **[arXiv] [PDF] // Over 150 citations on Google Scholar.**

Project Experiences

Federated Collaborative Platform and System for Digital Ophthalmology

Beijing, China

Research Subject with Aier Eye Hospital

2021.12 - 2023.06

- Designed the architecture and core components of the federated learning platform for ophthalmology applications.
- Implemented state-of-the-art asynchronous federated learning algorithms to enable efficient and robust model training across distributed hospitals.
- Explored multimodal AI solutions (imaging, text, structured data) to enable comprehensive analysis for heterogeneous data in ophthalmic diagnosis.

Open Source Contributions

FedML-AI Community (contributor & research intern) (★4k+)

2022.06 - 2022.09

- I enhanced **FedCV** with the popular object detection model (e.g. YOLOv5, YOLOv7, YOLOv8, etc.), deployed them to produce environment and provided technical support for the community.
- I completely ported the **FLamby** benchmark, a real-world medical dataset, to **FedML Open Platform**.

hCaptcha-challenger (maintainer) (★1.3k+)

2021.12 - 2023.10

- We developed a robust AI-powered captcha solver utilizing Python and Selenium, effectively bypassing hCaptcha with an **accuracy exceeding 90%**, and provided a user-friendly API for developers.
- I employed the CLIP model to achieve zero-shot captcha image classification and clustering for automatically labeling the captcha images.
- I released the **hcaptcha-model-factory** (★66) with a comprehensive workflow for data collection, model training, and deployment for community.

AI-Paper-Collector (maintainer) (★1.1k+)

2021.12 - 2022.12

- We designed and implemented an automated paper collector that efficiently retrieves over 10,000 research papers from top AI conferences (e.g., NeurIPS, ICLR, AAAI).
- I built a user-friendly web interface allowing researchers to effortlessly search, filter, and download papers based on various criteria. This interface has seen 5,000+ unique users since its launch.

Awesome-FL (maintainer) (★1.2k+)

2023.06 - present

- I actively contributed to the content curation, quality assurance, and maintenance of the **Awesome-FL** repository, a highly regarded resource for federated learning research.

Personal Projects

 [beiyuouo](#) (150+ followers, 490+ stars)

- **arxiv-daily** (★71): Automatically collect and push the latest arXiv papers to GitHub using GitHub Actions.
- **awesome-asynchronous-federated-learning** (★70): A collection of papers about asynchronous federated learning.
- **mid-air-draw** (★17): A simple hand-drawn and gesture recognition system using YOLOv5.

Selected Awards

2017	Silver , Asia-Pacific Informatics Olympiad, APIO	Beijing, China
2019	First Prize , The 3rd Silk Road Robotics Innovations Competition	Xi'an, China
2020	Second Prize , Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM)	Beijing, China
2020	Second Prize , CCCC - Group Programming Ladder Tournament	China
2020	Second Prize , Chinese Collegiate Computing Competition	Beijing, China
2023	Sliver & Bronze , The China International College Students' "Internet+" Innovation and Entrepreneurship Competition	Beijing, China
2020	Third Prize , CCCC - Artificial Intelligence Innovation Contest	Hangzhou, China
2020	First Prize , CCCC - Group Programming Ladder Tournament	Hainan, China
2020	Gold & Sliver , The 6th "Internet+" Innovation and Entrepreneurship Competition in Hainan	Hainan, China
2021	First Prize , Chinese Undergraduate Electronic Design Contest in Hainan	Hainan, China
2020	Second Prize , CCCC - Artificial Intelligence Innovation Contest in South China	Hainan, China

Services

IEEE Hainan University Branch

Hainan, China

President, Student Membership

2021.03 - 2022.06

Association of Robotics and Artificial Intelligence, Hainan University

Hainan, China

Vice President, Co-Founder

2020.07 - 2022.06

Skills & Interests

Language	Chinese(Native), English(Fluent, CET-6: 478, CET-4: 539, IELTS: working on!!)
Programming	Python (PyTorch, Tensorflow), C/C++, SQL
AI/ML Tools	Federated AI (FedML, PySyft), Computer Vision (OpenCV, YOLOv5), NLP (transformers)
Software Engineering	Git, Docker, Kubernetes, CI/CD
Photography	Enjoy the life and capture the moments :)