Bingjie YAN

Trustworthy Federated Learning · Privacy-Preserving ML · AI for Healthcare · Multi-modal Learning
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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**. 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**, **multi-modal** and **privacy-preserving** methods in the medical field. I am looking for a Ph.D position in **25 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), Practial 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
- Main Courses: Linear Algebra(97), Data Structure(99), Advanced Mathematics(90), C++ Programming(96), etc.
- Outstanding Graduate Awards (3%), School First-Class Academy Scholarship (3%)

Selected Publications

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

- **KAMOFL: 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 multi-modal AI solutions (fundus image, OCT image, medical report, etc.) to build a robust model with cross-silo modal 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 Competiton	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 Internation 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 :)