Bingjie YAN(闫冰洁)

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

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"Nothing is impossible."

Education

Institute of Computing Technology, Chinese Academy of Sciences   Beijing, China

Master of Engineering, Computer Science   2022.09 - Exp. 2025.06

· Research Areas: Asynchronous Federated Learning, Medical Application in FL.
· Advisor: Prof. Yiqiang Chen
· GPA: 87/100 (3.79/4)

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 (**Top 4%**)
· Outstanding Graduate Awards (**3%**), School First-Class Academy Scholarship (**3%**)

Research Interests

I am broadly interested in **federated learning** and **AI for healthcare**, particularly in the areas of medical image analysis and multi-modal data and aim to develop robust, efficient, privacy-preserving and scalable AI solutions for real-world applications. My previous work has primarily focused on **Trustworthy FL**, specifically in **asynchronous federated learning and privacy-preserving**.

Selected Publications

Note: Please refer to my Google Scholar for the complete list. The total citation is over 240 and 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. **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, Under Review).**

• **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, JCR-Q2, 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).** To be appeared.

• **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 in Google Scholar.**

• **FedCM: A Real-time Contribution Measurement Method for Participants in Federated Learning.** **B. Yan**, B. Liu, L. Wang, Y. Zhou, Z. Liang, M. Liu and C. Xu. (2021). **The 2021 International Joint Conference on Neural Networks (IJCNN'21, CCF-C, Oral).** [arXiv] [PDF]

• **An Improved Method for the Fitting and Prediction of the Number of COVID-19 Confirmed Cases Based on LSTM.** **B. Yan**, J. Wang, Z. Zhen, et al. (2020). **Computers, Materials & Continua (SCI, JCR-Q2).** [PDF]

Internships

FedML Ltd.   Remote

Research Intern   2022.06 - 2022.08

· Research on object detection and medical application in Federated Learning using MLDevOps framework.

Project Experiences

Federated Collaborative Platform System for Digital Ophthalmology Beijing, China
Research Subject with Aier Eye Hospital 2021.12 - 2023.06
· Researching the design of the federated learning platform and system for ophthalmology.
· Implementing asynchronous federated learning methods on the platform for more efficient training.

Open Source Contributions

FedML-AI Community (contributor) ⌂ (★4k+) 2022.06 - 2022.09
· I enhanced **FedCV** with the popular object detection model (e.g. YOLOv5, YOLOv7, YOLOv8, etc.), and provided technical support for the community.
· I successfully ported the **FLamby** benchmark 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.

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

International & National

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

Provincial

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!!)
Photography Enjoy the life and capture the moments :)