Kang Wei

PQ 515, Mong Man Wai Building, Department of Computing
The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong SAR
Homepage: http://peilab.comp.polyu.edu.hk/people/kang-wei/

PERSONAL INFORMATION

Citizenship   CHINA

EDUCATION

Ph.D.	Information and Communication Engineering	2018.09–2022.12
	Nanjing University of Science and Technology, China	
M.E.	Electronic and Information Engineering	2017.09–2018.08
	Nanjing University of Science and Technology, China	
B.E.	Information Engineering	2010.08–2014.07
	Xidian University, China	

PROFESSIONAL EXPERIENCE

The Hong Kong Polytechnic University
Post-doctoral Fellow, Department of Computing   2023.01–Present

Tencent Group
Research Intern, TEG   2021.06–2022.12

Panda Group
Engineer, Institute of Communication Technology   2014.08–2016.05

RESEARCH INTERESTS

Kang Wei (韦康) received his Ph.D. degree from Nanjing University of Science and Technology, supervised by Prof. Jun Li. Before that, he received the B.S. degree in information engineering from Xidian University, Xian, China, in 2014. He is currently a postdoctoral fellow at The Hong Kong Polytechnic University. He has won the 2022 IEEE Signal Processing Society Best Paper Award (IEEE 信号处理学会最佳论文) and 2022 Wiley China Open Science Author of the Year (Wiley 中国开放科学 2022 年度作者). He has served as reviewer for several prestigious conferences and journals such as ACM KDD, IEEE JSAC, IEEE TIFS, IEEE TKDE, IEEE TMC, etc. From Jun. 2021 to Dec. 2021, he was a research intern (Rhinoceros Bird Project) at Tencent, Shenzhen, supervised by Yong Cheng. He mainly focuses on privacy protection and optimization techniques for edge intelligence, such as federated learning, differential privacy and network resource allocation.

HONORS AND AWARDS

- Wiley China Open Science Author of the Year, Wiley, 2022
- National Scholarship for doctoral students, Ministry of Education, China, 2021
- Rhinoceros Bird Project, Tencent, 2021
- Outstanding Doctoral Program, Nanjing University of Science and Technology, 2021–2023

INNOVATION AND COMPETITION

- First Place, iDASH Privacy and Security Workshop-secure genome analysis competition, Track III: Confidential Computing, National Institutes of Health (NIH), 2021

BEST PAPER AWARDS

- IEEE Signal Processing Society Best Paper Award, 2022, for the paper "Federated Learning With Differential Privacy: Algorithms and Performance Analysis," in IEEE Transactions on Information Forensics and Security, vol. 15, pp. 3454-3469, 2020.

GRANTS

2. Matching Fund, The Hong Kong Polytechnic University, 2023.
1. Excellent Doctoral Program, Nanjing University of Science and Technology, 2021-2023, 3,000 CNY.

SCHOLARLY ADDRESSES

2. Invited Talk, "Communication Rounds Discounting in Federated Learning with Differential Privacy", IEEE International Symposium on a Word of Wireless, Mobile and Multimedia Networks (WOWMOM)-Intelligent Things and Services (INTHINGS), Online, 2020
1. Tutorial, "Privacy and Security in Federated Learning", IEEE/CIC ICCC, Online, 2020

PUBLICATIONS

Google Scholar Citation

Total citation: 800+, h-index: 8, i10-index: 6

Books

B1. Kang Wei, Jun Li, Chuan Ma, Ming Ding and H. Vincent Poor, "Differentially Private Federated Learning: Algorithm, Analysis and Optimization," Federated Learning Systems, Book Chapter, Springer Nature, 51-78, 2021.

Refereed Journal Papers

J12. Xin Yuan, Wei Ni, Ming Ding, **Kang Wei (Corresponding Author)**, Jun Li and H. Vincent Poor, "Amplitude-Varying Perturbation for Balancing Privacy and Utility in Federated Learning," Accepted by IEEE Transactions on Information Forensics & Security, 2023.

J11. Xiumei Deng, Jun Li, Chuan Ma, **Kang Wei**, Long Shi, Ming Ding and Wen Chen, "Low-latency Federated Learning with DNN Partition in Distributed Industrial IoT Networks," IEEE Journal on Selected Areas in Communications, vol. 41, no. 3, pp. 755-775, March 2023.

J10. Chuan Ma, Jun Li, Ming Ding, Bo Liu, **Kang Wei (Corresponding Author)**, Jian Weng, H. Vincent Poor, "RDP-GAN: A Rényi-Differential Privacy based Generative Adversarial Network," Accepted by IEEE Transactions on Dependable and Secure Computing, 2023.

J9. Xiumei Deng, Jun Li, Chuan Ma, **Kang Wei**, Long Shi, Ming Ding, Wen Chen and H. Vincent Poor, "Blockchain Assisted Federated Learning over Wireless Channels: Dynamic Resource Allocation and Client Scheduling," Accepted by IEEE Transactions on Wireless Communications, 2022.

J8. Jun Li, Yumeng Shao, **Kang Wei**, Ming Ding, Chuan Ma, Long Shi, Zhu Han, H Vincent Poor, "Blockchain Assisted Decentralized Federated Learning (BLADE-FL): Performance Analysis and Resource Allocation," IEEE Transactions on Parallel and Distributed Systems, vol. 33, no. 10, pp. 2401-2415, 1 Oct. 2022.

J7. **Kang Wei**, Jun Li, Ming Ding, Chuan Ma, Hang Su, Bo Zhang, H Vincent Poor, "User-level Privacy-preserving Federated Learning: Analysis and Performance Optimization," IEEE Transactions on Mobile Computing, vol. 21, no. 9, pp. 3388-3401, 1 Sept. 2022.

J6. **Kang Wei**, Jun Li, Chuan Ma, Ming Ding, Cailian Chen, Shi Jin, Zhu Han, H. Vincent Poor, "Low-Latency Federated Learning Over Wireless Channels With Differential Privacy," IEEE Journal on Selected Areas in Communications, vol. 40, no. 1, pp. 290-307, Jan. 2022.

J5. Jun Li, **Kang Wei**, Chuan Ma, Feng Shu, "DP-GenFL: A Local Differentially Private Federated Learning System through Generative Data," Accepted by SCIENCE CHINA Information Sciences, 2022.

J4. Cheng Wang, **Kang Wei**, Lingjun Kong, Long Shi, Zhen Mei, Jun Li, Kui Cai, "DNN-aided Read-voltage Threshold Optimization for MLC Flash Memory with Finite Block Length," IET Communications, vol. 16, no. 2, pp. 120-130, 2022.

J3. Chuan Ma, Jun Li, Ming Ding, **Kang Wei**, Wen Chen, H. Vincent Poor, "Federated Learning with Unreliable Clients: Performance Analysis and Mechanism Design," IEEE Internet of Things Journal, vol. 8, no. 24, pp. 17308-17319, 2021.

J2. **Kang Wei**, Jun Li, Ming Ding, Chuan Ma, Howard H. Yang, Farhad Farokhi, Shi Jin, Tony Q. S. Quek, H. Vincent Poor, "Federated Learning with Differential Privacy: Algorithms and Performance Analysis," IEEE Transactions on Information Forensics and Security, vol. 15, pp. 3454-3469, 2020.

J1. **Kang Wei**, Jun Li, Lingjun Kong, Feng Shu, Francis C. M. Lau, "Page-based Dynamic Partitioning Scheduling for LDPC Decoding in MLC NAND Flash Memory," IEEE Transactions on Circuits and Systems II: Express Briefs, vol. 66, no. 12, pp. 2082-2086, 2019.

Conference Papers

C3. Yifan Shi, Yingqi Liu, **Kang Wei**, Li Shen, Xueqian Wang and Dacheng Tao, "Make Landscape Flatter in Differentially Private Federated Learning", Accepted by IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR), 2023.

C2. Hanchi Shen, Jun Li, **Kang Wei**, Pengcheng Xia, Sirui Tian, Ming Ding, Zengxiang Li, "CluFL: Cluster-driven weighted FL model aggregation strategy", Accepted by IEEE International Conference on Parallel and Distributed Systems (ICPADS), 2022.

C1. **Kang Wei**, Jun Li, Lingjun Kong, Feng Shu, Yonghui Li, "Read-voltage Optimization for Finite Code Length in MLC NAND Flash Memory," In: IEEE Information Theory Workshop (ITW), 2018, pp. 1-5.

ACADEMIC SERVICE

Reviewer

- Peer-Review of ACM KDD, JSAC, TIFS, TKDE, TWC, TMC, etc.