

# JIE ZHANG

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## 👤 SHORT BIO

Jie Zhang is currently a Ph.D. candidate in the Department of Computing at The Hong Kong Polytechnic University, Hong Kong SAR. Her research interest broadly lies in the areas of edge computing and artificial intelligence. Some specific topics such as reinforcement learning, distributed machine learning federated learning, and computer vision are highly involved.

## 🎓 EDUCATION

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|---|----------------|
| <b>The Hong Kong Polytechnic University (PolyU)</b> , Hong Kong SAR<br><i>PhD Candidate</i> in Computer Science | 2018 – Present |
| <b>China University of Geosciences (CUG)</b> , Wuhan, China<br><i>M.E.</i> in Computer Science and Technology   | 2015 – 2018    |
| <b>China University of Geosciences (CUG)</b> , Wuhan, China<br><i>B.E.</i> in Network Engineering               | 2011 – 2015    |

## 📖 PUBLICATIONS

\* indicates equal contribution (co-first authors)

1. Xiaosong Ma\*, **Jie Zhang**\*, Song Guo, and Wenchao Xu. "Layer-wised Model Aggregation for Personalized Federated Learning." *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2022*, accepted. (CCF-A)
2. **Jie Zhang**, Song Guo, Xiaosong Ma, Haozhao Wang, Wenchao Xu, and Feijie Wu. "Parameterized Knowledge Transfer for Personalized Federated Learning." *Advances in Neural Information Processing Systems (NeurIPS)*, 2021. (CCF-A)
3. **Jie Zhang**, Song Guo, Zhihao Qu, Deze Zeng, Yufeng Zhan, Qifeng Liu, and Rajendra A. Akerkar. "Adaptive federated learning on Non-IID data with resource constraint." *IEEE Transactions on Computers* (2021). (CCF-A)
4. **Jie Zhang**, Zhihao Qu, Chenxi Chen, Haozhao Wang, Yufeng Zhan, Baoliu Ye, and Song Guo. "Edge learning: The enabling technology for distributed big data analytics in the edge." *ACM Computing Surveys (CSUR)* 54, no. 7 (2021): 1-36. (CCF-B)
5. **Jie Zhang**, Song Guo, Deze Zeng, and Zhihao Qu. "Multi-Path Routing Oriented Flow Statistics Collection in Software Defined Networks." In *2019 IEEE 25th International Conference on Parallel and Distributed Systems (ICPADS)*, pp. 101-108. IEEE, 2019. (CCF-C)
6. **Jie Zhang**, Deze Zeng, Lin Gu, Hong Yao, and Muzhou Xiong. "Joint optimization of virtual function migration and rule update in software defined NFV networks." In *GLOBECOM 2017-2017 IEEE Global Communications Conference*, pp. 1-5. IEEE, 2017. (CCF-C)
7. **Jie Zhang**, Deze Zeng, Lin Gu, Hong Yao, and Yuanyuan Fan. "On rule placement for multi-path routing in software-defined networks." In *International Conference on Collaborative Computing: Networking, Applications and Worksharing*, pp. 59-71. Springer, Cham, 2015.
8. Zhan, Yufeng, **Jie Zhang**, Zicong Hong, Leijie Wu, Peng Li, and Song Guo. "A survey of incentive mechanism design for federated learning." *IEEE Transactions on Emerging Topics in Computing* (2021).
9. Zeng, Deze, **Jie Zhang**, Lin Gu, Song Guo, and Jiangtao Luo. "Energy-efficient coordinated multipoint scheduling in green cloud radio access network." *IEEE Transactions on Vehicular Technology* 67, no. 10 (2018): 9922-9930.
10. Deze Zeng, **Jie Zhang**, Lin Gu, and Song Guo. "Stochastic scheduling towards cost efficient network function virtualization in edge cloud." In *2018 15th Annual IEEE International Conference on Sensing, Communication, and Networking (SECON)*, pp. 1-9. IEEE, 2018. (CCF-B)

11. Zeng, Deze, **Jie Zhang**, Lin Gu, Peng Li, and Hong Yao. "Minimize Coflow Completion Time via Joint Optimization of Flow Scheduling and Processor Placement." In *GLOBECOM 2017-2017 IEEE Global Communications Conference*, pp. 1-5. IEEE, 2017. (CCF-C)
12. Zeng, Deze, **Jie Zhang**, Song Guo, Lin Gu, and Kun Wang. "Take renewable energy into CRAN toward green wireless access networks." *IEEE network* 31, no. 4 (2017): 62-68.
13. Feijie Wu, Shiqi He, Song Guo, Zhihao Qu, Haozhao Wang, Weihua Zhuang, **Jie Zhang**, "Sign Bit is Enough: A Learning Synchronization Framework for Multi-hop All-reduce with Ultimate Compression," in 2022 59th ACM/IEEE Design Automation Conference (DAC), 2022. (CCF-A)

## IN PEER REVIEW

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1. **Jie Zhang**, Song Guo, Zhihao Qu, Deze Zeng, Haozhao Wang and Albert Zomaya. "Adaptive Vertical Federated Learning on Unbalanced Features." *IEEE Transactions on parallel and Distributed Systems, Major Revision*.
2. **Jie Zhang**, Song Guo, Xiaosong Ma, and Wenchao Xu. "Taskwise Model Decomposition for Personalized Federated Learning." under review.
3. **Jie Zhang**, Song Guo, Jingcai Guo, Deze Zeng, Jingren Zhou and Albert Zomaya. "FedGD: Breaking the Data-dependency in Federated Distillation." under review.

## PROJECT EXPERIENCE

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**RGC General Research Fund (GRF)** (Participant) 2022 – Present  
*Collaborative Learning over Resource-constrained Edge Networks via Generative Mutual Knowledge Transfer*

**RGC General Research Fund (GRF)** (Participant) 2021 – Present  
*Federated Learning with Non-IID Data over Resource-Constrained Mobile Edge Networks*

**RGC Research Impact Fund (RIF)** (Participant) 2020 – Present  
*Edge Learning: the Enabling Technology for Distributed Big Data Analytics in Cloud-Edge Environment*

**National Natural Science Foundation of China (NSFC)** (Participant) 2019 – 2022  
*Edge Intelligence Oriented Resource Management and Deployment Optimization*

## SKILLS

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- Programming tools: familiar with Python, Pytorch, understand java, C, C++
- Professional background: master the basic data structure and algorithm, machine learning, deep learning, edge computing and have strong engineering development ability.
- Qualification certificate: IELTS (6.5)

## HONORS AND AWARDS

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- Jun. 2013 *2<sup>nd</sup> Prize*, Contemporary Undergraduate Mathematical Contest in Modeling
- Jun. 2014 *National Scholarship for Encouragement*, China University of Geosciences, Wuhan
- Jun. 2015 *The Outstanding Undergraduate Student Honor*, China University of Geosciences, Wuhan
- Oct. 2017 *1<sup>st</sup> Prize*, Science and Technology Paper Seminar, China University of Geosciences, Wuhan
- Jun. 2018 *The Outstanding Graduate Student Honor*, China University of Geosciences, Wuhan

## TEACHING

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- Teaching Assistant, Programming Fundamentals, PolyU, Spring 2019, Autumn 2019.
- Teaching Assistant, Big Data Analytics, PolyU, Spring 2020, Spring 2021.
- Teaching Assistant, Big Data Computing, PolyU, Autumn 2020, Autumn 2021.