Jin Fang

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Education

University of Science and Technology of China (USTC) Anhui, China
PhD student in Computer Science (GPA: 3.46/4.00) 2020.9-present
Hunan University (HNU) Hunan, China
B.S. in Computer Science 2016.9-2020.6

Publications

1. **J. Fang**, G. Zhao, H. Xu, Z. Yu, B. Shen, X. Li, *GOAT: Gradient Scheduling with Collaborative In-Network Aggregation for Distributed Training*, IEEE/ACM International Symposium on Quality of Service (**IWQoS'23**)
2. **J. Fang**, G. Zhao, H. Xu, C. Wu, Z. Yu, *GRID: Gradient Routing with In-network Aggregation for Distributed Training*, IEEE/ACM Transactions on Networking (**ToN'23**)

Experience

Speeding up distributed training with programmable switches Zhijiang Lab, Hangzhou, China
Research Intern 2022.6-2022.9

- Mitigated the in-network aggregation performance down casued by asychronous arrived packets
- Designed a knapsack-based randomized rounding algorithm to perform gradient scheduling
- Implemented a prototype containing 8 servers and 3 switches with Pytorch and P4 (TNA architecture)
- Reduced the communication overhead of distibuted training tasks by 81.2%

Developing and testing Alcor, a cloud native SDN platform Suzhou, China
Developer 2020.9-2021.3

- Wrote a automatic building scripts with bash.
- Developed an end-to-end test of the virtualization control plane (ACA) with C++
- Added grpc thread for pulsar subscribe information (PR #274) with C++

Robust-awareness VNF placement in the edge cloud Hefei, China
Research Assistant 2021.2-2021.6

- Improved the robustness of edge clouds by limiting the influence of malicious users and failed VNFs.
- Designed a two-phase algorithm to solve the problem of virtual network functions (VNF) placement and request scheduling
- Implemented a prototype containing 6 Nvidia Jetson Tx2s and 20 Raspberry Pis with Python
- Improved the network throughput by 57% under exisitence the malicious user.

Patents

1. G. Zhao, **J. Fang**, H. Xu, C. Wu, *A gradient scheduling method based on programmable switch under PS architecture*, Published: CN114900482A
2. H. Xu, **J. Fang**, G. Zhao, H. Tu, H. Wang, *A VNF placement method in the edge cloud*, Published: CN113961324A

Awards

- Excellent price (25%) in Intel P4 China Hackthon 2022
- Doctoral first-class academic scholarship 2022
- Master's first-class study scholarship 2020, 2021