

# JUNXIAO WANG

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## INTRODUCTION

I'm currently a **Postdoctoral Fellow** at the **Department of Computing** at **The Hong Kong Polytechnic University**, working with Prof. Dr. Song Guo (CAE Fellow, IEEE Fellow and Director of PolyU Edge Intelligence Laboratory). My research interests fall into Privacy-Preserving Machine Learning, Federated Learning, Cloud and Programmable Networking.

## WORK EXPERIENCE

**The Hong Kong Polytechnic University, COMP, *Postdoctoral Fellow*** 2021.03 - Now  
Research: Federated Learning over Mobile Edge Networks, aiming at Machine Learning Governance  
Lab: PolyU Edge Intelligence Lab Director: Prof. Dr. Song Guo, CAE Fellow, IEEE Fellow

## TECHNICAL SKILLS

I have many cutting-edge skills related to Privacy-Preserving Machine Learning, e.g., Federated Learning, Gradient Inversion, Machine Unlearning, Backdoor, Transformers, and Self-Supervised Pre-Training, etc. Also, I'm professional in Cloud-Native Networking, e.g., Software-Defined Networks and Network Functions Virtualization. I'm familiar with many tools, e.g., Linux, PyTorch, and OpenStack, etc.

## EDUCATION

**Dalian University of Technology, Computer Technology Application, *PhD*** 2016.09 - 2020.12  
Thesis: Research on Techniques of Performance Guarantee for Software Defined Network Function Virtualization System Supervisor: Prof. Dr. Keqiu Li, IEEE Fellow

**Queen Mary University of London, EECS, *CSC Funded Joint PhD Student*** 2018.10 - 2019.10  
Research: Cloud Data Center Networking Enhancement with Software Defined Networking  
Lab: Networks Research Group Director: Prof. Dr. Steve Uhlig, Head of EECS

**Dalian University of Technology, Computer Systems Organization, *MEng*** 2014.09 - 2017.07  
Thesis: Research on Request Dispatching for Multi-Controllers in Software Defined Networking  
Supervisor: Prof. Dr. Keqiu Li, IEEE Fellow

**Dalian Maritime University, Software Engineering (Japanese Emphasized), *BE*** 2010.09 - 2014.06  
Thesis: Research on Load Balancing Mechanism Based on Floodlight Controller Platform  
Recommended Exemption Enrolling into Postgraduate of Dalian University of Technology

## HONORS AND AWARDS

The Hong Kong Polytechnic University Postdoc Matching Fund 2020.12  
Joint PhD Scholarship from the China Scholarship Council 2018.06  
Outstanding Postgraduate of Dalian University of Technology 2015.12  
Final First Prize and Best Creative Award in National University SDN Competition 2015.08

## PEER-REVIEWED PUBLICATIONS

Summary: In the past 5 years, I have published a total of 15 peer-reviewed papers, including a total of 4 conference papers as first or corresponding author, and a total of 4 journal papers as first author

### Conference Papers

- Rui Zhang, Song Guo, **Junxiao Wang**, Xin Xie, Dacheng Tao. A Survey on Gradient Inversion: Attacks, Defenses and Future Directions. International Joint Conference on Artificial Intelligence (IJCAI) 2022, Survey track. (correspondence)
- Junxiao Wang**, Song Guo, Xin Xie, Heng Qi. Federated Unlearning via Class-Discriminative Pruning. ACM The Web Conference (WWW) 2022.

- **Junxiao Wang**, Song Guo, Xin Xie, Heng Qi. Protect Privacy from Gradient Leakage Attack in Federated Learning. IEEE International Conference on Computer Communications (INFOCOM) 2022.
- **Junxiao Wang**, Yuchen Huang, Heng Qi, Keqiu Li, Steve Uhlig. CLICK-UP: Towards Software Upgrades of Click-driven Stateful Network Element. ACM SIGCOMM Conference 2018, Demo track.
- Keyan Zhao, **Junxiao Wang**, Heng Qi, Xin Xie, Keqiu Li. HBL-Sketch: A New Three-tier Sketch for Accurate Network Measurement. International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP) 2019.
- Wanqian Zhang, **Junxiao Wang**, Sheng Chen, Heng Qi, Keqiu Li. A Framework for Resource-aware Online Traffic Classification Using CNN. International Conference on Future Internet Technologies (CFI) 2019.
- Wenrui Zhou, Yuan Cao, Heng Qi, **Junxiao Wang**. An Effective Network Intrusion Detection Framework Based on Learning to Hash. IEEE International Conference on Smart Internet of Things (SmartIoT) 2019.

## Journal Papers

- Xin Xie, Xiulong Liu, **Junxiao Wang**, Song Guo, Heng Qi, Keqiu Li. Efficient Integrity Authentication Scheme for Large-scale RFID Systems. IEEE Transactions on Mobile Computing (TMC) 2022. (JCR-Q1, Impact Factor 5.577)
- Heng Qi, **Junxiao Wang**, Wenxin Li, Yuxin Wang, Tie Qiu. A Blockchain-driven IIoT Traffic Classification Service for Edge Computing. IEEE Internet of Things Journal (IoTJ) 2021. (JCR-Q1, Impact Factor 9.471)
- **Junxiao Wang**, Heng Qi, Keqiu Li, Steve Uhlig. Click-UP: Towards the Software Upgrade of Click based Modular Network Function. IEEE Systems Journal (ISJ) 2021. (JCR-Q1, Impact Factor 3.931)
- **Junxiao Wang**, Heng Qi, Keqiu Li, Xiaobo Zhou. PRSFC-IoT: A Performance and Resource Aware Orchestration System of Service Function Chaining for Internet of Things. IEEE Internet of Things Journal (IoTJ) 2018. (JCR-Q1, Impact Factor 9.471)
- **Junxiao Wang**, Heng Qi, Yang He, Wenxin Li, Keqiu Li. FlowTracer: An Effective Flow Trajectory Detection Solution Based on Probabilistic Packet Tagging in SDN-Enabled Networks. IEEE Transactions on Network and Service Management (TNSM) 2019. (JCR-Q1, Impact Factor 4.195)
- **Junxiao Wang**, Heng Qi, Wenxin Li, Keqiu Li, Steve Uhlig, Yuxin Wang. Dynamic SDN Control Plane Request Assignment in NFV Datacenters. IEEE Transactions on Network Science and Engineering (TNSE) 2021. (JCR-Q1, Impact Factor 3.894)
- Xinpeng Xu, Wenxin Li, Heng Qi, **Junxiao Wang**, Keqiu Li. Latency-Constrained Cost-Minimized Request Allocation for Geo-distributed Cloud Services. IEEE Open Journal of the Communications Society (OJCOMS) 2020.

## SERVICE EXPERIENCE

### Academic Services

Engaged in Peer-Review of INFOCOM, CVPR, JSAC, TNET, CSUR, IoTJ, TNSM  
 Program Committee of IEEE ICPADS 2020 Workshop on Network Computing and Data Management  
 Session Chair of IEEE International Conference on Parallel and Distributed Systems (ICPADS) 2019

### Student Teaching

Shepherd of National Science Competitions, Postgraduate Thesis in Dalian University of Technology  
 Shepherd of PhD Thesis in Queen Mary University of London  
 Shepherd of PhD Thesis in The Hong Kong Polytechnic University

## TALKS

### Invited Talks

Title: Privacy Protection in Federated Learning	
Ritsumeikan University & CCF Dalian International Seminar   Online	2022.03

### Conference Talks

Title: Protect Privacy from Gradient Leakage Attack in Federated Learning	
IEEE International Conference on Computer Communications (INFOCOM)   Online	2022.05
Title: Federated Unlearning via Class-Discriminative Pruning	
ACM The Web Conference (WWW)   Online	2022.04
Title: CLICK-UP: Towards Software Upgrades of Click-driven Stateful Network Elements	
ACM SIGCOMM Conference, Demo Track   Budapest, Hungary	2018.08

### Competition Talks

## REFEREES

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Prof. Dr. Song Guo, COMP, PolyU, CAE Fellow, IEEE Fellow, song.guo@polyu.edu.hk

Prof. Dr. Steve Uhlig, EECS, QMUL, Head of EECS, steve.uhlig@qmul.ac.uk

Prof. Dr. Keqiu Li, CIC, TJU, Head of CIC, IEEE Fellow, keqiu@tju.edu.cn

Prof. Dr. Heng Qi, CS, DUT, hengqi@dlut.edu.cn