Jialong Li

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Research Interests

Computer Networks, Data Center Networks, Optical Networks, Optical Communication, Network for Machine Learning, Network System

Education

Tsinghua University Beijing, China
Doctor of Philosophy, Electronic Engineering 07/2016 – 10/2021
Thesis: Research on the convergence of optical access and metro networks
Advisor: Bingkun Zhou, Xiaoping Zheng

Tsinghua University Beijing, China
Bachelor of Engineering, Electronic Engineering 07/2012 – 06/2016

Professional Experience

Max Planck Institute for Informatics (MPI-INF) Germany
Postdoctoral Associate 11/2021 – Present
Topics: Networks for machine learning, congestion control in optical data centers, next-generation optical networks for data centers
Advisor: Yiting Xia

Publications

[1] Leveraging Joint Allocation of Multidimensional Resources for Distributed Task Assignment
Jialong Li, N. Hua, K. Zhu, C. Zhao, G. Pan, Y. Li, X. Zheng, B. Zhou
*IEEE/OSA Journal of Optical Communications and Networking (JOCN, **IF=5.0**), 2022*

[2] Flexible Low-Latency Metro-Access Converged Network Architecture Based on Optical Time Slice Switching
Jialong Li, N. Hua, Z. Zhong, Y. Yu, X. Zheng, B. Zhou
*IEEE/OSA Journal of Optical Communications and Networking (JOCN, **IF=5.0**), 2019*

[3] Balancing Energy Efficiency and Device Lifetime in TWDM-PON under Traffic Fluctuations
Jialong Li, Z. Zhong, N. Hua, X. Zheng, B. Zhou
*IEEE Communications Letters (CL, **IF=4.1**), 2017*

[4] A Flexible Low-Latency Metro-Access Converged Network Approach Based on Time-Synchronized TWDM-PON
Jialong Li, N. Hua, Y. Yu, Z. Zhong, X. Zheng, B. Zhou
Optical Fiber Communications Conference (OFC), 2018

[5] Towards Low-Latency Distributed Tasks Collaboration by Joint Optimization of Transmission, Computation and Storage Resources Allocation in Edge Computing
Jialong Li, N. Hua, C. Zhao, Y. Li, X. Zheng, B. Zhou
Asia Communications and Photonics Conference (ACP), 2020

[6] Joint Optimization of Multidimensional Resources Allocation in Cloud Networking
Jialong Li, K. Zhu, N. Hua, C. Zhao, Y. Li, X. Zheng, B. Zhou
IEEE 7th Optoelectronics Global Conference (OGC), 2022

[7] Hop-On Hop-Off Routing: A Fast Tour across the Optical Data Center Network for Latency-Sensitive Flows
Jialong Li, Y. Lei, F. De Marchi , R. Joshi, B. Chandrasekaran, Y. Xia
6th Asia-Pacific Workshop on Networking (APNet 2022)

[8] Efficient Flow Scheduling in Distributed Deep Learning Training with Echelon Formation
R. Pan*, Y. Lei*, **Jialong Li**, Z. Xie, B. Yuan, Y. Xia
Twenty-First ACM Workshop on Hot Topics in Networks (HotNets 2022)

[9] Provisioning Short-Term Traffic Fluctuations in Elastic Optical Networks
Z. Zhong, N. Hua, M. Tornatore, **Jialong Li**, Y. Li, X. Zheng, B. Mukherjee
*IEEE/ACM Transactions on Networking (ToN, **IF=3.7**), 2019*

[10] Provisioning Uninterrupted Satellite Communication Services by Preset-Satellite-Chain (PSC)-Based Seamless Handover **(Best Poster Award)**
C. Zhao, N. Hua, **Jialong Li**, X. Zheng
Asia Communications and Photonics Conference (ACP), 2020

[11] Time-Sliced Flexible Resource Allocation for Optical Low Earth Orbit Satellite Networks
Z. Zheng, N. Hua, Z. Zhong, **Jialong Li**, Y. Li, X. Zheng
*IEEE Access (**IF=3.9**), 2019*

[12] Achieving Ultralow-Latency Optical Interconnection for High Performance Computing (HPC) Systems by Joint Allocation of Computation and Communication Resources **(High Scored Paper)**
R. Luo, Y. Yu, N. Hua, Z. Zhong, **Jialong Li**, X. Zheng, B. Zhou
Optical Fiber Communications Conference (OFC), 2019

[13] Achieving Global Optical Spectral Perception via Unified Information Model and Adaptive Perceptual Information Calibration
K. Zhu, N. Hua, C. Zhao, Y. Li, **Jialong Li**, Y. Li, X. Zheng, B. Zhou

Optoelectronics and Communications Conference (OECC), 2021

[14] Throughput Scaling for MMF-Enabled Optical Datacenter Networks by Time-Tlicing-based Crosstalk Mitigation
Z. Zhong, N. Hua, Y. Yu, Z. Wu, J. Li, H. Yan, S. Li, R. Luo, **Jialong Li**, Y. Li, X. Zheng
Optical Fiber Communications Conference (OFC), 2018

[15] Fast-Reconfigurable Optical Interconnect Architecture based on Time-Synchronized Node Coordination for High Performance Computing
Y. Yu, N. Hua, Z. Zhong, **Jialong Li**, R. Luo, Z. Zheng, X. Zheng
Asia Communications and Photonics Conference (ACP), 2017

Teaching

Max Planck Institute for Informatics (MPI-INF)

Co-Lecturer, Data Networks — Spring 2022
Tutor, Hot Topics in Data Networks Seminar — Fall 2021
Tutor, Hot Topics in Data Networks Seminar — Fall 2022

Tsinghua University

TA, Introduction to Information Science and Technology — Fall 2018
TA, Introduction to Information Science and Technology — Fall 2017

Professional Service

Conferences

Technical Program Committee, 24th Asia Communications and Photonics Conference (ACP/IPOC 2024)
Reviewer, WCSP 2019

Journals

Reviewer, IEEE/ACM Transactions on Networking
Reviewer, IEEE/OSA Journal of Optical Communications and Networking
Reviewer, IEEE Communications Letters
Reviewer, Mathematics
Reviewer, Photonics
Reviewer, Applied Science
Reviewer, Computer Networks and Communications
Reviewer, Sensors

Academic Service

Committee member of Max Planck Institute Internship Program, 2022

Awards and Honors

Tsinghua's Friend – Xiaomi Corporation Scholarship (Tsinghua University) 2020
The Second Prize of Comprehensive Scholarship (Tsinghua University) 2018
Excellence Scholarship for Social Work (Tsinghua University) 2014

Student Mentoring

Master Thesis

Vadim Farutin, Saarland University, 10/2022 – 08/2023, Topic: Network-Aware GPU Sharing for Distributed Deep Learning, Score: 1.0 (**Highst**)

Interns

Haotian Gong, The University of British Columbia, 05/2023 – 08/2023, Topic: Uniform-Cost Multi-Path Routing in Reconfigurable Data Center Networks

Aoyu Gong, EPFL, 07/2023 – 02/2024, Topic: Uniform-Cost Multi-Path Routing in Reconfigurable Data Center Networks

Max Huang, University of Waterloo, 01/2024 – 04/2024, Topic: Fastest Path Routing in Reconfigurable Data Center Networks

Laskhay Rastogi, Indian Institute of Technology (IIT), Kanpur, 10/2023 – 01/2024, Topic: Optimal Model Placement for Mixture of Experts (MoE) Training

Selected Talks

Routing and Scheduling in Optical Data Center Networks for Emerging Cloud Applications

Shanghai Jiao Tong University, Shanghai, China, 02/2024
Fudan University, Shanghai, China, 02/2024
ShanghaiTech University, Shanghai, China, 02/2024
University of Science and Technology of China, Hefei, China, 03/2024

Hop-On Hop-Off Routing: A Fast Tour across the Optical Data Center Network for Latency-Sensitive Flows

6th Asia-Pacific Workshop on Networking (APNet 2022), online, 07/2022
Tsinghua-Berkeley Shenzhen Institute, Shenzhen, China, 04/2023

Leveraging Joint Allocation of Multidimensional Resources for Distributed Task Assignment

IEEE 7th Optoelectronics Global Conference (OGC 2022), online, 12/2022
Conference on Information Optics and Photonics, Xi'An, China, 07/2021

Building Low-Latency and Energy-Efficient Optical Metro-Access Converged Networks

Max Planck Institute for Informatics, online, 12/2020
University of Vienna, online, 04/2021

Updated on 04/2024