SHUONING ZHANG

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EDUCATION

B.Sc in Applied Mathematics, Minor in Computer Science **Anhui , China**
University of Science and Technology of China (USTC), Anhui, China *(Sep 2022 – Present)*
• Overall GPA: 3.93/4.3(Ranked 2/16 in Applied Mathematics; 20/186 overall)

HONORS & AWARDS

• Zhang Zongzhi Sci-Tech Scholarship 2023
• Outstanding Student Scholarship, Grade 2 2024
• The Chinese Mathematics Competitions, 1st prize in Anhui Province 2024

RESEARCH INTERESTS

Network optimization and flow algorithms, Stochastic Programming, Operation Research

PUBLICATIONS

Qian Lv, Yuxiao Zhang, **Shuoning Zhang**, Ruoxing Li, Ke Meng, Bowen Zhang, Fuguang Huang, Xiaoliang Chen, Zuqing Zhu,
"On the TPE Design to Efficiently Accelerate Hitless Reconfiguration of OCS-Based DCNs," *IEEE Journal on Selected Areas in Communications, vol. 43, no. 5, pp. 1780–1792, May 2025*

Xiaoliang Chen, Wenbang Zheng, **Shuoning Zhang**, Xiaoyan Dong, Ke Meng, Zuqing Zhu,
"DRL-TPE: Learning to Optimize TPE of Optical Interconnects to Accelerate Hitless Reconfigurations," *in Proceedings of the Optical Fiber Communications Conference (OFC),* Los Angeles, USA, paper M4H.5, Mar.2025

RESEARCH EXPERIENCE

Research Assistant Prof Zuqing Zhu's Research Group, USTC Mar 2023-Present
• Developed a large-scale Python/C++ simulation platform to model ultra-scale optical network environments and evaluate algorithmic performance across diverse operational scenarios.
• Designed and analyzed optimization algorithms for the hitless reconfiguration problem in optical circuit-switched (OCS) data center networks, proving NP-hardness for a key subproblem and proposing an efficient heuristic with substantial performance gains.
• Contributed to two publications, including an IEEE JSAC paper (minor revision) and an OFC 2025.

Research Assistant Prof Yong-Hong Kuo's Research Group, the University of Hong-Kong Jul 2025-Present
•.Designed and analyzed network resilience algorithms using scenario reduction techniques to enhance computational efficiency in stochastic optimization.
• Applied the method to a real-world resilience planning problem for the Hong Kong MTR network, achieving significant runtime reduction while maintaining solution quality.
• Investigated theoretical properties of the reduction method and its integration into two-stage stochastic programming models.

ACADEMIC PROJECTS

Ultra-Large-Scale Optical Fiber Networks: Protection and Restoration Techniques
National Undergraduate Training Program for Innovation and Entrepreneurship, USTC | Advisor: Prof. Zuqing Zhu
• Principal investigator of a university-funded innovation project on protection and restoration mechanisms in ultra-large-scale optical fiber networks.
• Designed and implemented algorithms for path protection and restoration with millisecond-level single-path computation and millisecond-level batch processing.
• Performed large-scale simulations under various failure scenarios, analyzing network resilience and proposing robust recovery strategies.
• Developed heuristic and domain-partition optimization methods, reducing restoration time while maintaining high protection success rates.

SKILLS

Programming: C, Python(Scientific Computing), LATEX, MATLAB

English: TOEFL: 104(R27, L26, S24, W27)