Songshi Dou

M.S. Student in Control Engineering
School of Automation
Beijing Institute of Technology (BIT)
Beijing 100081, China

songshidou@hotmail.com
https://songshidou.github.io
(+86) 187-0131-1355

Summary / Statement

Songshi Dou' s research focuses on computer networks, including Software-Defined Networking (SDN), Network Function Virtualization (NFV), Data Center Network (DCN), and Content Delivery Network (CDN). He has published 9 papers and owned 4 Chinese patents.

Education

Beijing Institute of Technology (BIT), Beijing, China 2019 - 2022 (expc.)

M.S. Student in Control Engineering

Advisor: Prof. Zehua Guo

North China Electric Power University (NCEPU), Beijing, China 2015 - 2019

B.S. in Automation, July 2019

Publications

([†]Equal contribution, [*]Corresponding author)

Journal Papers

[J1] Zehua Guo, **Songshi Dou**, Sen Liu, Wendi Feng, Wenchao Jiang, Yang Xu, and Zhi-Li Zhang, "Maintaining Control Resiliency and Flow Programmability in Software-Defined WANs During Controller Failures", *IEEE/ACM Transactions on Networking* (**TON**), Accepted.

[J2] Haoran Ni, Zehua Guo, Changlin Li, **Songshi Dou**, Chao Yao, and Thar Baker, "Network Coding-based Resilient Routing for Maintaining Data Security and Availability in Software-Defined Networks", *Elsevier Journal of Network and Computer Applications* (**JNCA**), Accepted.

[J3] Zehua Guo, **Songshi Dou**, Yi Wang, Sen Liu, Wendi Feng, and Yang Xu, "HybridFlow: Achieving Load Balancing in Software-Defined WANs with Scalable Routing", *IEEE Transactions on Communications* (**TCOM**), vol. 69, no. 8, pp. 5255-5268, Aug. 2021.

[J4] **Songshi Dou**, Guochun Miao, Zehua Guo, Chao Yao, Weiran Wu, and Yuanqing Xia, "Matchmaker: Maintaining Network Programmability for Software-Defined WANs under Multiple Controller Failures", *Elsevier Computer Networks* (**COMNET**), vol. 192, p. 108045, 2021.

Conference & Workshop Papers

[C1] Li Qi†, **Songshi Dou**†, Zehua Guo, Changlin Li, Yang Li, and Tengteng Zhu, "Towards Low Control Latency Metaverse in SD-WANs", *IEEE International Workshop on Social and Metaverse Computing and Networking 2022* (**SocialMeta'22**).

[C2] **Songshi Dou**, Zehua Guo, and Yuanqing Xia, "ProgrammabilityMedic: Predictable Path Programmability Recovery under Multiple Controller Failures in SD-WANs", *IEEE International Conference on Distributed Computing Systems 2021* (**ICDCS'21**). (**Accept Ratio: 97/489=19.8%**)

[C3] Yijun Sun, Zehua Guo, **Songshi Dou**, and Yuanqing Xia, "Video Quality and Popularity-aware Video Caching in Content Delivery Networks", *IEEE International Conference on Web Services 2021* (**ICWS'21**).

[C4] Zehua Guo, **Songshi Dou**, and Wenchao Jiang, "Improving the Path Programmability for Software-Defined WANs under Multiple Controller Failures", *IEEE/ACM International Symposium on Quality of Service 2020* (**IWQoS'20**).

Posters & Demos

[D1] Yijun Sun, Zehua Guo, **Songshi Dou**, Junjie Zhang, Changlin Li, and Xiang Ouyang, "Poster: Enabling Fast Forwarding in Hybrid Software-Defined Networks", *IEEE International Conference on Network Protocols 2021 Poster* (**ICNP'21**).

Manuscripts

[M1] Zehua Guo, **Songshi Dou**, and Wenchao Jiang, "Towards Improved Path Programmability Recovery for Software-Defined WANs under Multiple Controller Failures", *IEEE/ACM Transactions on Networking* (**TON**), Major Revision.

[M2] Zehua Guo, **Songshi Dou**, and Wenfei Wu, "Towards Flexible and Predictable Path Programmability Recovery under Multiple Controller Failures in Software-Defined WANs", *IEEE/ACM Transactions on Networking* (**TON**), Major Revision.

[M3] Zehua Guo, **Songshi Dou**, Li Qi, and Julong Lan, "Maintaining the Path Programmability in Software-Defined Wide Area Networks: A Survey", *Journal of Electronics & Information Technology* (**JEIT**), Under Review. (in Chinese)

[M4] Zehua Guo, Changlin Li, **Songshi Dou**, Tengteng Zhu, and Yi Cai, "Maintaining Performance of Software-Defined WANs with Efficient Critical Routing", *Elsevier Computer Networks* (**COMNET**), Under Review.

Patents

[P1] Zehua Guo, and **Songshi Dou**, "Optimizing Flow Programmability under Multiple Controller Failures in Software-Defined Networks", Chinese Patent, ZL202010544094.4.

[P2] Zehua Guo, **Songshi Dou**, and Yuanqing Xia "A Scalable Routing Method for Realizing Load Balancing in Software-Defined Wide Area Networks", Chinese Patent, ZL202010974299.6.

[P3] Zehua Guo, Penghao Sun, **Songshi Dou**, Yutian Zhang, Ning Han, and Yuanqing Xia, "Deep Reinforcement Learning-based Data Center Network Energy Management and Quality of Service Optimization Method", Chinese Patent, ZL202010308862.6.

[P4] Zehua Guo, Penghao Sun, **Songshi Dou**, Yuanqing Xia, and Honghai Ji, "A Load Balancing Method for Multi-Controller in Software-Defined Networking", Chinese Patent, ZL202010094237.6.

[P5] Zehua Guo, Yutian Zhang, Ning Han, and **Songshi Dou**, "A Traffic Engineering-centric Traffic Matrix Pridiction Method", Chinese Patent, Application Number: 202110810615.0.

Honors & Awards

- National Scholarship Award (Top 1%), Chinese Ministry of Education *2021*
- Outstanding Master Student Model (Top 1%), Beijing Institute of Technology *2021*
- Outstanding Master Student Scholarship Award, Beijing Institute of Technology *2021*
- ICNP 2021 Student Registration Award, IEEE Computer Society TCDP *2021*
- OSDI 2021 Student Grant, USENIX *2021*
- ICDCS 2021 Student Registration Award, IEEE Computer Society TCDP *2021*
- CNCC 2020 Student Registration Award, China Computer Federation (CCF) *2020*
- Third Prize of China Post-Graduate Mathematical Contest in Modeling, China *2020*
- First-class Master Student Scholarship Award, Beijing Institute of Technology *2020*
- Bachelor Student Scholarship Award, North China Electric Power University *2016, 2017, 2018*

Talks & Presentations

- "ProgrammabilityMedic: Predictable Path Programmability Recovery under Multiple Controller Failures in SD-WANs", *IEEE International Conference on Distributed Computing Systems 2021* (**ICDCS'21**), Online, July 2021.
- "Improving the Path Programmability for Software-Defined WANs under Multiple Controller Failures", *IEEE/ACM International Symposium on Quality of Service 2020* (**IWQoS'20**), Online, June 2020.

Language

- Native Chinese (Mandarin)
- Fluent English

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