

# Zeyu Luan

Tel: (+86) 152-0220-8663 | Email: luke.zy.luan@gmail.com

## EDUCATION

<b>Tsinghua University</b> <i>Ph.D. in Computer Science</i>	Shenzhen, China <i>Jun. 2024 (Expected)</i>
<b>Tianjin University</b> <i>M.S. in Computer Science</i>	Tianjin, China <i>Jun. 2018</i>
<b>Tianjin University</b> <i>B.S. in Electrical Engineering</i>	Tianjin, China <i>Jun. 2015</i>

## RESEARCH INTERESTS

<b>Traffic Engineering (TE)</b> Machine Learning for Networking	<b>Software-Defined Networking (SDN)</b> Programmable Data Plane
--------------------------------------------------------------------	---------------------------------------------------------------------

## SELECTED PUBLICATIONS

- [1] **(ICNP'23) Zeyu Luan**, Qing Li, Zutao Zhang, Yong Jiang, Meng Chen, Yu Wang, Kejun Li.  
"AWEsome-Cache: Dependency-free Rule-caching for Arbitrary Wildcard Patterns in TCAM"  
*IEEE 31st International Conference on Network Protocol (ICNP)*, 2023.
- [2] **(IPDPS'23) Zeyu Luan**, Qing Li, Yi Wang, Yong Jiang.  
"H-Cache: Traffic-aware Hybrid Rule-caching in Software-Defined Networks"  
*IEEE 37th International Parallel and Distributed Processing Symposium (IPDPS.)*, 2023.
- [3] **(GLOBECOM'21) Zeyu Luan**, Lie Lu, Qing Li, Yong Jiang.  
"EPC-TE: Explicit Path Control in Traffic Engineering with Deep Reinforcement Learning"  
*IEEE Global Communications Conference (GLOBECOM)*, 2021.
- [4] **(INFOCOM'23) Lie Lu**, Qing Li, Dan Zhao, Yuan Yang, **Zeyu Luan**, Jianer Zhou, Yong Jiang, Mingwei Xu.  
"Hawkeye: a Dynamic and Stateless Multicast Mechanism with Deep Reinforcement Learning"  
*IEEE International Conference on Computer Communications (INFOCOM)*, 2023.

## INDUSTRIAL EXPERIENCE

<b>Pengcheng Laboratory (PCL) Visiting Student</b> • Participated in research and development of the next-generation network architecture.	Jan. 2023 – Dec. 2023, China
<b>Polytech Nice-Sophia Intern</b> • Involved in French engineering education accredited by CTI (Commission des Titres d'Ingénieur).	May. 2016 – Jun. 2023, France

## ADDITIONAL INFORMATION

**Technical Skills:** Python, PyTorch, P4, Mininet, Gurobi  
**Language Levels:** TOEFL (100), GRE (325), French (B1), Mandarin(native)  
**Awards:** TBSI Leaders of Tomorrow Scholarship, THU Excellent Comprehensive Scholarship

### **1. Wildcard Rule Caching System for SDN [1][2]**

- Resolving cross-rule dependency by concertizing specific wildcard bits of the best-match rule.
- Caching routes for elephant/mice flows with segment routing and label forwarding to enable scalable SDN data plane.

### **2. Traffic Engineering with Machine Learning [3][4]**

- Training and inference of near-optimal traffic split ratios across multi-path routing.
- Dynamic membership prediction for multicast traffic and controller-switch mapping in multi-domain networks.

### **3. In-network Intelligence with Programmable Data Plane**

- Offloading control logic from the control plane to the data plane, enabling line-rate forwarding and eliminating round-trip control-loop latency.
- Employing knowledge distillation from well-trained deep neural networks to regression trees that are compatible with the match-action paradigm of SDN flow tables.