CHONLAM LAO

chonlamlao{AT}g.harvard.edu
SEC 4.429, 150 Western Ave, Allston, MA 02134

ME

Fourth-year PhD candidate at Harvard University, advised by Professors Minlan Yu and Aditya Akella. My research interests include networked systems, machine learning systems, and programmable hardware. My thesis focuses on designing efficient machine learning training and inference systems with enhanced networking and reliability support.

EDUCATION

Harvard University, Boston (advised by Prof. Minlan Yu and Prof. Aditya Akella)   2021 - Present
PhD of Computer Science, year 4

Tsinghua University, Beijing (advised by Prof. Wenfei Wu)   2018 - 2021
Master of Computer Science
Outstanding Graduates, 78 of 5650 $\approx 1.38\%$
Outstanding Thesis Award, "ATP: In-network Aggregation for Multi-tenant Learning"

National Cheng Kung University, Taiwan   2015 - 2018
Bachelor of Computer Science & Information Engineering
2nd place Outstanding Graduation Project
GPA 3.91/4.3, Top 10% ranking

WORK & RESEARCH EXPERIENCES

Research Intern @ Alibaba Cloud, Bellevue, WA   Jun 2024 - Present
Researching fault tolerance and live migration to enhance the reliability of distributed ML training systems.

Student Researcher @ Google, remote MA   Jun 2022 - Dec 2023
Researching multipathing RDMA NIC (Falcon) to enhance network support for distributed ML training systems.

Research Assistant @ Harvard University, MA   Sep 2022 - Present
Researching edge-data center FPGA joint solutions to enable cost-effective and low-latency ML inference systems.

Visiting Scholar @ University of Wisconsin–Madison, Madison WI   Sep 2019 - Feb 2020
Researching in-network aggregation services to reduce network costs in distributed ML training systems.

PUBLICATIONS

- "TrainMover: Efficient ML Training Live Migration with No Memory Overhead", *in submission.*
- "Rethinking Datacenter Multipathing for RDMA NICs", *in submission.*
- "EdgeSight: Enabling Modeless and Cost-Efficient Inference at the Edge", *in submission.*
- "ATP: In-network Aggregation for Multi-tenant Learning", <u>ChonLam Lao</u>, Yanfang Le, Kshiteej Mahajan, Yixi Chen, Wenfei Wu, Aditya Akella, Michael Swift, *NSDI 2021.* **(Best Paper Award)**
- "A Generic Service to Provide In-network Aggregation for Key-value Streams", Yongchao He, Wenfei Wu, Yanfang Le, Ming Liu, <u>ChonLam Lao</u>, *ASPLOS 2023.* **(Distinguished Paper Awards)**
- "eTran: Extensible Kernel Transport with eBPF", Zhongjie Chen, Qingkai Meng, <u>ChonLam Lao</u>, Yifan Liu, Fengyuan Ren, Minlan Yu, Yang Zhou, *NSDI 2025.*
- "THC: Accelerating Distributed Deep Learning Using Tensor Homomorphic Compression", Minghao Li, Ran Ben Basat, Shay Vargaftik, <u>ChonLam Lao</u>, Kevin Xu, Xinran Tang, Michael Mitzenmacher, Minlan Yu, *NSDI 2024.*
- "Efficient Data-Plane Memory Scheduling for In-Network Aggregation", Hao Wang, Yuxuan Qin, <u>ChonLam Lao</u>, Yanfang Le, Wenfei Wu, Kai Chen, *ICNP 2023.*
- "In-Network Key-Value Cache with Linearizability", Yuxuan Qin, Weize Gao, <u>ChonLam Lao</u>, Wenfei Wu, Kai Chen, *ICPADS 2023.*

AWARDS AND ACHIEVEMENTS

Achievements
- Outstanding Graduates at Tsinghua University
- Outstanding Thesis Award at Tsinghua University
- Top 6% in 2017 Taiwan Collegiate Programming Examination

- Bronze Prize of 2017 ACM-ICPC Asia Taiwan Regional Contest
- Silver Reward of 2014 Macao Olympiad in Informatics (MOI)
- Second Prize of 2013 National Olympiad in Informatics in Province (NOIP)
- Silver Reward of 2013 Macao Olympiad in Informatics (MOI)
- Second Prize of 2012 National Olympiad in Informatics in Province (NOIP)
- Silver Reward of 2012 Macao Olympiad in Informatics (MOI)

Awards
- The Baogang Scholarship (2020 - 2021)
- First price of Tsinghua University Scholarship MO/HK/TW (2018 - 2020)
- Macau Government Scholarship for Master Student (2018 - 2020)
- Taiwan Government Scholarship for Oversea Student (2015 - 2018)
- Macau Government Scholarship (2015 - 2018)

Professional Services

- IEEE/ACM Transactions on Networking (TON) reviewer since 2021
- IEEE Transactions on Services Computing (TSC) reviewer since 2024
- NSDI'22 external reviewer

Patents

- Wenfei Wu, **ChonLam Lao**, Yixi Chen. Distributed task processing method and system. CN Patent Application CN114546633A, filed December 2020. Patent Pending.
- Wenfei Wu, **ChonLam Lao**, Yixi Chen. Distributed task processing method and system and storage medium. CN Patent Application CN114553879A, filed December 2020. Patent Pending.
- Wenfei Wu, **ChonLam Lao**, Yixi Chen. Distributed task exception handling method and system. CN Patent Application CN114553880A, filed December 2020. Patent Pending.

Teaching Experiences

- COMPSCI 145: Networking at Scale, Harvard University, 2023
- Security Technologies in Cyberspace, Tsinghua University, 2018
- Advanced Competitive Programming, National Cheng Kung University 2017, CSIE7557

Other Links

- Github - https://github.com/laochonlam
- Personal website - https://laochanlam.com/
- LinkedIn - https://www.linkedin.com/in/chonlam-lao-384865122/