Hao Lan

Present Appointment

Postdoctoral Researcher
Department of Computer Science & Technology
Tsinghua University,
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Beijing, China

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Research Interests

Distributed Machine Learning, Deep Reinforcement Learning, Graph Neural Networks, Federated Learning, Privacy Preserving, Data Center Network, Load Balancing, Congestion Control.

Education

University of Toronto, Toronto, Ontario, Canada
Department of Electrical & Computer Engineering

- ◊ **Ph.D.**, Electrical & Computer Engineering **2018 – 2023**
  - ▷ *Advisor:* Baochun Li, Department of Electrical & Computer Engineering

Xidian University, Xi'an, Shannxi, China
School of Telecommunications Engineering

- ◊ **M.Engr.**, Electronics & Telecommunications Engineering **2015 – 2018**
  - ▷ *Advisor:* Huaxi Gu, School of Telecommunications Engineering
- ◊ **B.Engr.**, Telecommunication Engineering **2011 – 2015**

Research Experience

Postdoctoral Researcher, supervised by Prof Jiwu Shu **2023 – Present**
Tsinghua University, Beijing

Research Assistant, supervised by Prof. Baochun Li **2018 – Present**
University of Toronto, Toronto

Research Assistant, supervised by Prof. Huaxi Gu **2015 – 2018**
Xidian University, Xi'an

Publications

Ziyi Zhang, Mingxuan Ouyang, Wanyu Lin, **Hao Lan**, and Lei Yang. "Debiasing Graph Representation Learning Based on Information Bottleneck." IEEE Transactions on Neural Networks and Learning Systems (**TNNLS 2024**).

Wanyu Lin, **Hao Lan**, and Jiannong Cao. "Graph privacy funnel: A variational approach for privacy-preserving representation learning on graphs." IEEE Transactions on Dependable and Secure Computing (**TDSC 2024**).

Tianhang Zheng, **Hao Lan**, Baochun Li. "Be Careful with Third-Party Packages: You May Unconsciously Spread Backdoor Model Weights," in the Proceedings of the Sixth Conference on Machine Learning and Systems (**MLSys 2023**), Miami, Florida, June 4-8, 2023. (**acceptance ratio: 22%**).

Wanyu Lin, **Hao Lan**, Hao Wang, Baochun Li. "*OrphicX*: A Causality-Inspired Latent Variable Model for Interpreting Graph Neural Networks," in the Proceedings of the 2022 IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2022**), Oral Presentation, New Orleans, Louisiana, June 19-24, 2022. **(Best paper finalist 0.4%)**.

Hao Lan, Li Chen, Baochun Li. "Accelerated Device Placement Optimization with Contrastive Learning," in the Proceedings of the 50th International Conference on Parallel Processing (**ICPP 2021**), Online, Argonne National Laboratory, Illinois, August 9-12, 2021. (**acceptance ratio: 26.4%**).

Wanyu Lin, **Hao Lan**, Baochun Li. "Generative Causal Explanations for Graph Neural Networks," in the Proceedings of the 38th International Conference on Machine Learning (**ICML 2021**), Online, July 18-24, 2021. (**acceptance ratio: 21.4%**).

Hao Lan, Li Chen, Baochun Li. "*EAGLE*: Expedited Device Placement with Automatic Grouping for Large Models," in the Proceedings of the 35th IEEE International Parallel and Distributed Processing Symposium (**IPDPS 2021**), Online, Portland, Oregon, May 17-21, 2021.

Hao Lan, Huaxi Gu, Xiaoshan Yu, Xi Wang, "A Novel Multi-Controller Flow Schedule Scheme for Fat-Tree Architecture," in the Proceedings of the 15th International Conference on Optical Communications and Networks (ICOCN 2016).

Hao Lan, Huaxi Gu, Xiaoshan Yu, Xi Wang, "OROF: A Hybrid Topology with High Scalability for Data Center Networks," in the Proceedings of the 14th International Conference on Optical Communications and Networks (ICOCN 2015).

[◊] **Refereed Journal Articles** (in reverse chronological order)

Shangqi Ma, Huaxi Gu, **Hao Lan**, Xiaoshan Yu, Kun Wang, "RSS: A Relay-Based Schedule Scheme for Optical Data Center Network," Photonic Network Communications 39.1 (2020): 70-77.

Xiaoshan Yu, Hong Xu, Huaxi Gu, **Hao Lan**, "THOR: A Scalable Hybrid Switching Architecture for Data Centers," IEEE Transactions on Communications 66.10 (2018): 4653-4665.

Submitted Papers (under review)

Wanyu Lin, **Hao Lan**. "Graph-Relational Hypernetworks for Personalized Federated Learning," under submission.

Hao Lan, Zhengguo Liu, Qing Wang, Jiwu Shu. "FedFwd: Memory-Efficient Federated Learning with Forward Gradient," under submission.

Professional Services

- ◊ **Program Committee Member:** 2022 the ICLR Workshop on "**PAIR²Struct**: Privacy, Accountability, Interpretability, Robustness, Reasoning on Structured Data."
- ◊ **Reviewer for Journal Manuscript Submissions:** IEEE TCOM, IEEE TDSC, IEEE TNNLS

◊ **Reviewer for Conference Manuscript Submissions:** IEEE CVPR, NeurIPS, ACM Multimedia, ACM MMSys, IEEE IWQoS, IEEE ICDCS

Scholarly Talks

EAGLE: Expedited Device Placement with Automatic Grouping for Large Models
IEEE IPDPS, Virtual Conference *May 2021*
Accelerated Device Placement Optimization with Contrastive Learning
ACM ICPP, Virtual Conference *August 2021*

Honors and Awards

◊ **Shuimu Tsinghua Scholar Program**, Tsinghua University, 2023-2026.
◊ **Doctoral Completion Award**, Department of Electrical & Computer Engineering, University of Toronto, 2022 - 2023.
◊ **University of Toronto Fellowship**, Department of Electrical & Computer Engineering, University of Toronto, 2018 - 2022.
◊ **Edward S. Rogers Sr. Graduate Scholarships**, University of Toronto, 2018.
◊ **CSC Scholarships**, China Scholarship Council, 2018.
◊ **National scholarship**, Xidian University (Top 3% of 700+), 2015,
◊ **Honorable Mention**, International Interdisciplinary Contest In Modeling (ICM), 2014.
◊ **Grand Prize**, 9th "Challenge Cup" Shaanxi College Student Curricular Academic Science and Technology Works Competition, 2013.
◊ **Honorable Mention**, International Mathematical Contest In Modeling (MCM), 2013.

Teaching Experience

Teaching Assistant **2015 – 2022**
University of Toronto, Toronto

▷ ECE 344: Operating System **2020 Fall, 2021 Fall, Fall 2022**
▷ ECE 353: System Software **Winter 2019, Winter 2020, Winter 2022**
▷ ECE 353: System Software (Course Development) **2019 Summer**

Xidian University, Xi'an

▷ Operating System **2017, 2018**
▷ Switching Principle and Technology **2016**
▷ Communication Networks Theory **2016**
▷ C Program Design **2016**

Mentoring

Seyed Amir Ali Mousavi Biuki, undergraduate student
University of Toronto **Sept. 2019 – Apr. 2020**
Thesis title:"Device Placement Optimization using Reinforcement Learning"
Ahmed Abdulkadir, undergraduate student
University of Toronto **Sept. 2019 – Apr. 2020**
Thesis title:"Optimizing Device Placement for Training Deep Learning Algorithms using Graph Neural Networks"