Hao Lan

PRESENT APPOINTMENT

Fifth-year Ph.D. Candidate
Department of Electrical & Computer Engineering
University of Toronto, 10 Kings College Rd., Toronto, Ontario M5S 3G4, Canada

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RESEARCH INTERESTS

Distributed Machine Learning, Deep Reinforcement Learning, Graph Neural Networks, Federated Learning, Privacy Preserving, Networking.

EDUCATION

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

- ◊ **Ph.D.**, Electrical Computer Engineering, 2018 – Present
  - ▷ *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

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

[◊] **Refereed Papers in Conference Proceedings** (in reverse chronological order)

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 33/8161=0.4%)**.

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. "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%).

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)

Hao Lan, Baochun Li. "Device Placement Optimization with Pipeline Parallelism via Deep Reinforcement Learning," under submission.

Tianhang Zheng, **Hao Lan**, Baochun Li. "Be Careful with Third-Party Packages: You May Unintentionally Spread Backdoor Model Weights," under submission.

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

Hao Lan, Baochun Li. "Accelerated Federated Learning with Graph Hypernetworks," 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

- ◊ **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.
- ◊ **Second Prize**, China Undergraduate Mathematical Contest in Modeling (CUMCM), Shaanxi, 2013.
- ◊ **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"

References

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教育背景

多伦多大学，多伦多，加拿大 2018 – 至今
在读博士研究生 电子与计算机工程

西安电子科技大学, 西安, 陕西 2015 – 2018
硕士 通信工程

西安电子科技大学, 西安, 陕西 2011 – 2015
学士 通信工程

研究兴趣

分布式机器学习，强化学习，图神经网络，联邦学习，隐私保护，计算机网络

已发表的会议论文

1. 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), **Best Paper Finalist**, Oral Presentation, New Orleans, Louisiana, June 19-24, 2022. (**CCF A**)

2. 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. (**CCF A**)

3. **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. (**CCF B**)

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. (**CCF B**)

5. **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).

6. **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).

已发表的期刊论文

1. 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.

2. 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. (**CCF A**)

待发表的论文

1. **Hao Lan**, Baochun Li. "Device Placement Optimization with Pipeline Parallelism via Deep Reinforcement Learning," under submission.

2. Tianhang Zheng, **Hao Lan**, Baochun Li. "Be Careful with Third-Party Packages: You May Unintentionally Spread Backdoor Model Weights," under submission.

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

4. **Hao Lan**, Baochun Li. "Accelerated Federated Learning with Graph Hypernetworks." under submission

学术服务

- **程序委员会委员 (Program Committee Member):** 2022 the ICLR Workshop on "**PAIR^{2}Struct**: Privacy, Accountability, Interpretability, Robustness, Reasoning on Structured Data."

- **学术期刊论文审稿:** IEEE TCOM, IEEE TDSC, IEEE TNNLS

- **学术会议论文审稿:** IEEE CVPR, NeurIPS, ACM Multimedia, ACM MMSys, IEEE IWQoS, IEEE ICDCS

学术演讲

- **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*

获奖情况

- **Doctoral Completion Award**, ECE Department, University of Toronto *2022*
- **University of Toronto Fellowship**, ECE Department, University of Toronto *2018*
- **Edward S. Rogers Sr. Graduate Scholarships**, University of Toronto *2018*
- **国家公派博士研究生项目 (与多伦多大学合作奖学金)**，国家留学基金管理委员会 *2018*
- **国家奖学金**, 西安电子科技大学 *2015*
- **Honorable Mention**，美国大学生数学建模竞赛 (ICM) *2014*
- **二等奖**, 中国大学生数学建模竞赛 (CUMCM), 陕西省 *2013*
- **特等奖**，第九届"挑战杯"陕西大学生课外学术科技作品竞赛 *2013*
- **Honorable Mention**，美国大学生数学建模竞赛 (MCM) *2013*

教学经验

- **助教**, 多伦多大学 *2018 – 2022*
  - ECE344: Operating Systems *2020 – 2022*
  - ECE353: System Software *2019 – 2022*
  - 课程实验设计 ECE353: System Software *2019 夏*

- **助教**, 西安电子科技大学 *2015 – 2018*
  - 操作系统 *2017 – 2018*
  - C 语言设计 *2017*
  - 交换机原理与技术 *2016*
  - 通信网络原理 *2016*

毕业论文指导

- **Seyed Amir Ali Mousavi Biuki**，学士学位毕业论文，多伦多大学 *2019 – 2020*
  论文标题：Device Placement Optimization using Reinforcement Learning

- **Ahmed Abdulkadir**，学士学位毕业论文，多伦多大学 *2019 – 2020*
  论文标题：Optimizing Device Placement for Training Deep Learning Algorithms using Graph Neural Networks

推荐人

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