Qinghao Hu

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EDUCATION

Nanyang Technological University, Singapore *2020 ~ 2023*
Ph.D. Student in Computer Science
Supervisor: Prof. Tianwei Zhang and Prof. Yonggang Wen

National University of Singapore, Singapore *2018 ~ 2020*
Master in Electrical Engineering

Zhejiang University, China *2014 ~ 2018*
Bachelor in Electrical Engineering

RESEARCH INTEREST

- Systems for Large Models

- Datacenter Management and Scheduling

- Machine Learning for Systems

PUBLICATION

Conference & Journal Papers

1. **Characterization of Large Language Model Development in the Datacenter**
   Qinghao Hu*, Zhisheng Ye*, Zerui Wang*, Guoteng Wang, Meng Zhang, Qiaoling Chen, Peng Sun, et al.
   [NSDI '24] *USENIX Symposium on Networked Systems Design and Implementation*

2. **Hydro: Surrogate-Based Hyperparameter Tuning Service in Datacenters**
   Qinghao Hu, Zhisheng Ye, Meng Zhang, Qiaoling Chen, Peng Sun, Yonggang Wen, Tianwei Zhang
   [OSDI '23] *USENIX Symposium on Operating Systems Design and Implementation*

3. **Lucid: A Non-Intrusive, Scalable and Interpretable Scheduler for Deep Learning Training Jobs**
   Qinghao Hu*, Meng Zhang*, Peng Sun, Yonggang Wen, Tianwei Zhang
   [ASPLOS '23] *Architectural Support for Programming Languages and Operating Systems*
   Distinguished Paper Award

4. **Primo: Practical Learning-Augmented Systems with Interpretable Models**
   Qinghao Hu, Harsha Nori, Peng Sun, Yonggang Wen, Tianwei Zhang
   [ATC '22] *USENIX Annual Technical Conference*

5. **Characterization and Prediction of Deep Learning Workloads in Large-Scale GPU Datacenters**
   Qinghao Hu, Peng Sun, Shengen Yan, Yonggang Wen, Tianwei Zhang
   [SC '21] *International Conference for High Performance Computing, Networking, Storage, and Analysis*

6. **Deep Learning Workload Scheduling in GPU Datacenters: A Survey**
   Zhisheng Ye*, Wei Gao*, Qinghao Hu*, Peng Sun, Xiaolin Wang, Yingwei Luo, Tianwei Zhang, et al.
   [CSUR] *ACM Computing Surveys*

Under Review

1. **AMSP: Super-Scaling LLM Training via Advanced Model States Partitioning**
   Qiaoling Chen, Qinghao Hu, Zhisheng Ye, Guoteng Wang, Peng Sun, Yonggang Wen, Tianwei Zhang
   [Preprint] *Submitted to a Conference*

2. **Boosting Distributed Full-graph GNN Training with Asynchronous One-bit Communication**
   Meng Zhang, Qinghao Hu, Peng Sun, Yonggang Wen, Tianwei Zhang
   [**Preprint**] *Submitted to a Conference*

3. **FedDSE: Distribution-aware Sub-model Extraction for Federated Learning over Resource-constrained Devices**
   Haozhao Wang, Yabo Jia, Meng Zhang, Qinghao Hu, Hao Ren, Peng Sun, Yonggang Wen, Tianwei Zhang
   [**Under Review**] *Submitted to a Conference*

PROFESSIONAL SERVICE

[**EuroSys '24**] EuroSys Conference	Shadow Committee Member
[**EuroSys '23**] EuroSys Conference	Shadow Committee Member
[**OSDI '22**] USENIX Symposium on Operating Systems Design and Implementation	AE Committee Member
[**ATC '22**] USENIX Annual Technical Conference	AE Committee Member
[**EuroSys '22**] EuroSys Conference	AE Committee Member
[**SOSP '21**] ACM Symposium on Operating Systems Principles	AE Committee Member

TALK

Hydro: Surrogate-Based Hyperparameter Tuning Service in Datacenters

ChinaSys, Wuhan China	*Jul. 2023*
OSDI, Boston United States	*Jul. 2023*

Lucid: A Non-Intrusive, Scalable and Interpretable Scheduling System

Huawei, Beijing China	*May. 2023*
MLSys Seminar Singapore	*Apr. 2023*
ASPLOS, Vancouver Canada	*Mar. 2023*

Primo: Practical Learning Systems with Interpretable Models

ChinaSys, Nanjing China	*Dec. 2022*
ATC, Carlsbad California United States	*Jul. 2022*

Scheduling in Large-Scale GPU Datacenters

National University of Singapore	*Jan. 2022*

Characterization and Prediction of DL Workloads in Datacenters

SC, St. Louis Missouri United States	*Nov. 2021*

Cluster Scheduling for Deep Learning

S-Lab for Advanced Intelligence, Singapore	*Apr. 2021*

STUDENT MENTORED

I am fortunate to mentor and co-advise the research of the following students:

- **Ph.D. Students**: Meng Zhang, Zerui Wang (SJTU), Yutong Wu
- **Master Students**: Qiaoling Chen, Tan Ru Phing (NUS)
- **Undergraduates**: Peilin Chen, Amrita Ravishanker

HONOR

Google Ph.D. Fellowship	*2023*
Distinguished Paper Award of ASPLOS '23	*2023*
Youth Outstanding Paper Award of WAIC '23	*2023*
Student Travel Grant of OSDI '23	*2023*
Best Undergraduate Thesis Award	*2018*
Outstanding Graduates of Zhejiang University	*2018*