

YAU, Chung Yiu

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RESEARCH INTERESTS

- ◊ (TMLR) (Arxiv) Data-parallel decentralized optimization for machine learning.
 - Neural network training on large-scale datasets by utilizing GPU clusters in the setting of fast computation and minimal communication.
 - ◊ (ICML 2024) Optimization of contrastive learning and negative sampling.
 - ◊ (ICML 2025) Large language model quantization for memory efficiency and inference speedup.
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EDUCATION & ACADEMIA

Postdoctoral Associate Nov 2025 - Later
@ Department of Electrical and Computer Engineering, University of Minnesota.
Advisor: [Prof. Mingyi Hong](#).

Ph.D. Systems Engineering & Engineering Management 2021 - 2025
@ The Chinese University of Hong Kong.
Supervisor: [Prof. Hoi-To Wai](#).
◊ Research focus: convergence analysis of new decentralized optimization algorithms with communication compression.

B.Sc. Computer Science 2017 - 2021
@ The Chinese University of Hong Kong.
◊ First Class Honour, ELITE Stream.

WORK EXPERIENCE

Applied Scientist Intern June - Sep 2024
@ Amazon Web Services, Santa Clara, California.
◊ Research on large language model quantization, especially quantization-aware training.
◊ Proposed an adaptive rotation method for fine-tuning with [paper](#) presented at ICML 2025. Our algorithm fine-tunes a quantized LLM by quantization-aware training on Llama, Pythia and Qwen models.

Applied Scientist Intern June - August 2023
@ Amazon Web Services, Shanghai.
◊ Study the large batch inefficiency in contrastive learning pre-training.
◊ Proposed a small batch sampling algorithm with [paper](#) presented at ICML 2024. Our algorithm improves negative pair sampling for pre-training.

ACADEMIC ACTIVITIES

Invited Talk
Communication Efficient Decentralized Optimization Sep 2024
@ Department of Electrical and Computer Engineering, University of Minnesota.

LLM Quantization-Aware Training July 2025
@ INFORMS International 2025, Singapore.

Teaching Assistant 2021 - 2025
@ Department of Systems Engineering and Engineering Management, The Chinese University of Hong Kong.

- ◊ ENGG2440 Discrete Mathematics for Engineers
- ◊ FTEC2101 Optimization Methods

Voluntary Reviewer
@ conferences and journals:
◊ NeurIPS (2025 Top Reviewer), ICML, ICLR, TMLR
◊ IEEE TSP, ICASSP, TAC, L-CSS

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RESEARCH PUBLICATION

- [1] Chung-Yiu Yau, Haoming Liu, and Hoi-To Wai. A stochastic approximation approach for efficient decentralized optimization on random networks. *arXiv preprint arXiv:2410.18774v2*, 2025.
- [2] Quan Wei*, Chung-Yiu Yau*, Hoi-To Wai, Dongyeop Kang, Youngsuk Park, Mingyi Hong, et al. Roste: An efficient quantization-aware supervised fine-tuning approach for large language models. *Proceedings of the 42st International Conference on Machine Learning*, 2025. *Equal contribution.
- [3] Haoming Liu, Chung-Yiu Yau, and Hoi-To Wai. Decentralized stochastic optimization over unreliable networks via two-timescales updates. *IEEE Transactions on Signal Processing*, 2025.
- [4] Haoming Liu, Chung-Yiu Yau, and Hoi-To Wai. A two-timescale primal-dual algorithm for decentralized optimization with compression. In *2025 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2025.
- [5] Chung-Yiu Yau, Hoi-To Wai, Parameswaran Raman, Soumajyoti Sarkar, and Mingyi Hong. EMC²: Efficient MCMC negative sampling for contrastive learning with global convergence. In *Proceedings of the 41st International Conference on Machine Learning*, pages 56966–56981. PMLR, 2024.
- [6] Chung-Yiu Yau and Hoi-To Wai. Fully stochastic distributed convex optimization on time-varying graph with compression. In *2023 62nd IEEE Conference on Decision and Control (CDC)*, pages 145–150. IEEE, 2023.

- [7] Xiaolu Wang, Chung-Yiu Yau, and Hoi-To Wai. Network effects in performative prediction games. In *International Conference on Machine Learning*, pages 36514–36540. PMLR, 2023.
- [8] Chung-Yiu Yau and Hoi-To Wai. Docom: Compressed decentralized optimization with near-optimal sample complexity. *Transactions on Machine Learning Research*, 2023.
- [9] Bingqing Song, Ioannis Tsaknakis, Chung-Yiu Yau, Hoi-To Wai, and Mingyi Hong. Distributed Optimization for Overparameterized Problems: Achieving Optimal Dimension Independent Communication Complexity. *Advances in Neural Information Processing Systems*, 2022.
- [10] Qiang Li, Chung-Yiu Yau, and Hoi-To Wai. Multi-agent Performative Prediction with Greedy Deployment and Consensus Seeking Agents. *Advances in Neural Information Processing Systems*, 2022.
- [11] Chung-Yiu Yau, Haoli Bai, Irwin King, and Michael R Lyu. DAP-BERT: Differentiable Architecture Pruning of BERT. In *International Conference on Neural Information Processing*, pages 367–378. Springer, 2021.