CHUIYANG MENG

IEEE Graduate Student Member ⋄ chuiyangmeng@ece.ubc.ca, chuiyangmeng@gmail.com

RESEARCH INTERESTS

Self-evolving AI, Edge Intelligence, Distributed Machine Learning, Network Management.

EDUCATION

The University of British Columbia, Vancouver, Canada *September 2021 - Present*
Doctor of Philosophy (Ph.D.), Department of Electrical and Computer Engineering
Supervisor: Vincent W.S. Wong
Thesis: Resource-aware Distributed Edge Intelligence

Johns Hopkins University, Homewood, Baltimore, U.S.A. *August 2018 - May 2020*
Master of Science (M.S.), Department of Electrical and Computer Engineering

Harbin Institute of Technology, Harbin, P.R.C. *September 2014 - June 2018*
Bachelor of Engineering (B.Eng.), School of Electronics and Information Engineering
Supervisor: Shuai Han, Hsiao-Hwa Chen

EXPERIENCE

Vector Institute, Toronto, Canada *January 2026 - Present*
Applied Machine Learning Intern, Responsible AI Team

- Researching on establishing a deepfake video detection system that identifies manipulated multimodal content and safeguards large-scale models in downstream applications.
- Developing training and validation recipes to improve robustness to real-world forgery.

The University of British Columbia, Vancouver, Canada *September 2021 - Present*
Graduate Research Assistant

- Researching on emergent modularities in foundation models and developing brain-like functional specialization for self-evolving AI.
- Proposed a federated fine-tuning framework with low-rank Gram matrices and Procrustes alignment (FLoRG), improved the downstream task accuracy and reduced the communication overhead by up to 2041×.
- Proposed a zeroth-order optimization-based federated fine-tuning framework with heterogeneous block activation (ZorBA) and an ϵ-lexicographic optimization algorithm, reduced the VRAM usage by up to 62.41%.
- Proposed an adaptive split federated learning (ASFL) framework over wireless networks, designed an online optimization approach to solve the resource allocation problem, and improved the learning efficiency by up to 80%.
- Designed a GNN-based approach to solve the resource allocation optimization problem for decentralized federated learning (DFL) in D2D networks, maintained the learning performance while improving the system cost by up to 25.93%.

SELECTED PUBLICATIONS

Conference Publications

1. **Chuiyang Meng**, Ming Tang, and Vincent W.S. Wong, "FLoRG: Federated Fine-tuning with Low-rank Gram Matrices and Procrustes Alignment", accepted for publication in *Proceedings of International Conference on Learning Representations (ICLR)*, Rio de Janeiro, Brazil, 2026, Acceptance rate: 28%.
2. **Chuiyang Meng**, Ming Tang, and Vincent W.S. Wong, "ZorBA: Zeroth-order Federated Fine-tuning of LLMs with Heterogeneous Block Activation", accepted for publication in *Proceedings of IEEE International Conference on Computer Communications (INFOCOM)*, Tokyo, Japan, 2026, Acceptance rate: 18.9%.
3. **Chuiyang Meng**, Ming Tang, Mehdi Setayesh, and Vincent W.S. Wong, "GNN-based Neighbor Selection and Resource Allocation for Decentralized Federated Learning", in *Proceedings of IEEE Global Communications Conference (GLOBECOM)*, Kuala Lumpur, Malaysia, Dec. 2023.
4. Xiao Deng, Xuanli Wu, **Chuiyang Meng**, Shuai Han, Xiaojie Fang"A mobile relay selection strategy in cooperative spectrum sharing framework", in *Proceedings of IEEE International Conference on Communications (ICC)*, Paris, France, May 2017.

Journal Publications

1. **Chuiyang Meng**, Ming Tang, and Vincent W.S. Wong, "ASFL: An Adaptive Model Splitting and Resource Allocation Framework for Split Federated Learning", major revision in *IEEE Transactions on Mobile Computing (TMC)*, 2025.
2. **Chuiyang Meng**, Ming Tang, Mehdi Setayesh, and Vincent W.S. Wong, "Tackling Resource Allocation for Decentralized Federated Learning: A GNN-based Approach", in *IEEE Transactions on Mobile Computing (TMC)*, vol. 24, no. 10, pp. 9554-9569, Oct. 2025.
3. Zijun Gong, Cheng Li, Fan Jiang, Ruoyu Su, Ramachandran Venkatesan, **Chuiyang Meng**, Shuai Han, Yan Zhang, Shudong Liu, Kun Hao, "Design, Analysis, and Field Testing of an Innovative Drone-Assisted Zero-Configuration Localization Framework for Wireless Sensor Networks", in *IEEE Transactions on Vehicular Technology (TVT)*, vol. 66, no. 11, pp. 10322-10335, Nov. 2017.
4. Cheng Li, Fan Jiang, **Chuiyang Meng**, Zijun Gong, "A New Turbo Equalizer Conditioned on Estimated Channel for MIMO MMSE Receiver", in *IEEE Communications Letters*, vol. 21, no. 4, pp. 957-960, Apr. 2017.

PROFESSIONAL SERVICES

Technical Reviewers

- IEEE Transactions on Wireless Communications (TWC)
- IEEE Transactions on Mobile Computing (TMC)
- IEEE Internet of Things Journal (IoT-J)

TEACHING

Teaching Assistant

- **ELEC 331 Computer Communications**
  Fall 2021, Spring 2022, Fall 2023, Spring 2024, Spring 2025
  The University of British Columbia, Department of Electrical and Computer Engineering

- **EN 520.647 Information Theory**
  Fall 2019
  Johns Hopkins University, Department of Electrical and Computer Engineering

SKILLS

- **Programming:** Python (PyTorch), Matlab, Linux, Latex,
- **Technique:** Github, Huggingface, Mathematical optimization
- **Language:** English (Proficient), Mandarin (Native)