

# HONGDA WU

3023 LAS Bldg, 4700 Keele Street, Toronto, ON M3J 1P3 Canada

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## RESEARCH INTERESTS

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- Designing theoretical framework for distributed/federated learning (FL) systems
- Leveraging foundation model for privacy-preserving ML use cases (e.g., with transferability)
- Integrating GenAI with FL systems for better robustness and adaptability (e.g., personalization)

## RESEARCH EXPERIENCE

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**SONY R&D** Tokyo, Japan  
*Summer Intern.* Mentor: Shinya Maruyama and Masanobu Jimbo May 2023 - Aug. 2023

- Focused on label-free model evaluation for federated learning in Auto-driving systems

**Noah's Ark Lab, HUAWEI Montreal Research Centre** Montreal, Canada  
*Graduate Co-op (Research Intern).* Mentor: Dr. Guojun Zhang Sept. 2022 - Feb. 2023

- Focused on personalized federated learning with meta-learning and clustering methods
- Contribution: a technical report includes 1) comprehensive literature review, and 2) empirical results of existing popular benchmarks and the proposed efficient clustering design

**Dept. of EECS, Lassonde School of Engineering, York University** Toronto, Canada  
*Graduate Research Assistant.* Advisor: Prof. Ping Wang Sept. 2019 - Present

- Focused on enabling federated learning in edge computing systems. Developed foundational theory, algorithms, and systems for efficient model training from local data at distributed edge devices/servers
- Contribution: adaptive aggregation [[TCCN'21](#), [ICC'21](#)], arbitrary client participation [[TNSE'22](#), [WCNC'22](#)], adaptive sub-model training [[TMC'23](#), [ICCC'23](#)]

## EDUCATION

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**Ph.D.** in Electrical Engineering & Computer Science Sept. 2019 - Dec. 2023  
York University (Advisor: [Prof. Ping Wang](#)) Toronto, Canada

- Thesis: Federated Learning for Heterogeneous Networks: Algorithmic and System Design

**M.A.Sc** in Electrical Engineering Sept. 2016 - July 2019  
Communication University of China Beijing, China

**B.Eng.** in Electrical Engineering Sept. 2012 - July 2016  
Inner Mongolia University Hohhot, China

## PUBLICATION

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- [J1] **Hongda Wu**, Ping Wang, C V Aswarth Narayana, "Straggler-resilient Federated Learning: Tackling Computation Heterogeneity with Layer-wise Partial Model Training in Mobile Edge Network," *submitted to IEEE Transactions on Mobile Computing*. [[Preprint](#)]
- [J2] **Hongda Wu**, Ping Wang, "Node Selection Toward Faster Convergence for Federated Learning on Non-IID Data," *IEEE Transactions on Network Science and Engineering*, vol. 9, no. 5, 2022. [[DOI](#)] [[Code](#)]

- [J3] **Hongda Wu**, Ali Nasehzadeh, Ping Wang, “A Deep Reinforcement Learning-Based Caching Strategy for IoT Networks with Transient Data,” *IEEE Transactions on Vehicular Technology*, vol. 71, no. 12, Dec. 2022. [\[DOI\]](#)
- [J4] **Hongda Wu**, Ping Wang, “Fast-Convergent Federated Learning with Adaptive Weighting,” *IEEE Transactions on Cognitive Communications and Networking*, vol.7, no.4, 2021. [\[DOI\]](#)
- [C1] **Hongda Wu**, Ping Wang, C V Aswarth Narayana, “ Model-heterogeneous Federated Learning with Partial Model Training,” *IEEE International Conference on Communications in China (ICCC 2023)*, Dalian, China [\[DOI\]](#)
- [C2] **Hongda Wu**, Ping Wang, “Probabilistic Node Selection for Federated Learning with Heterogeneous Data in Mobile Edge,” *IEEE Wireless Communications and Networking Conference (WCNC 2022)*, Austin, TX, USA [\[DOI\]](#). **The Best Paper Awards WCNC 2022**
- [C3] **Hongda Wu**, Ping Wang, “Fast-convergent Federated Learning with Adaptive Weighting,” *IEEE Conference on Communication (ICC 2021)*, Montreal, QC, Canada [\[DOI\]](#)

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## PROFESSIONAL SERVICES & ACTIVITIES

### Technical Reviewer

for thr IEEE Transactions on Wireless Communication, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Communication, IEEE Transactions on Mobile Computing, IEEE Transactions on Cognitive Communications and Networking, IEEE Communications Letters, etc.

International Conference on Artificial Intelligence and Statistics (AISTATS) 2023

IEEE International Conference on Communications (ICC) 2022, 2021

IEEE Global Communications Conference (Globecom) 2021, 2020

### Research Mentoring

- C. V. Aswarth Narayana (May-Aug. 2022), [Mitacs Globalink](#) research intern at York U.; Topic: Dropout-based adaptive model training for heterogeneous federated learning system
- Aakash Agarwal (May-Aug. 2022), Mitacs Globalink research intern at York U. (now graduate student at University of Pennsylvania); Topic: Deep reinforcement learning based IoT caching design
- Wireless Communications System Design Sept. 2019 - Aug. 2022  
with Prof. Danijela Cabric, University of California, Los Angles

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## AWARDS & HONORS

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| • Best Thesis Nomination (Ph.D.)   | Faculty of Graduate Studies, York U., 2023 |
| • IEEE WCNC 2022 Best Paper Awards   | IEEE Communication Society, 2022           |
| • Academic Excellence Fund   | Faculty of Graduate Studies, York U., 2022 |
| • Hadi and Ozra Arjomandi Graduate Scholarship                             | Dept. EECS, LAS, 2022                      |
| • YU Graduate Fellowship & Scholarship                                     | York U., 2019 - 2023                       |
| • May 4th Youth Medal (Top 0.08%, 13/15000)                                | City of Beijing, 2019                      |
| • Outstanding Graduate Thesis (M.A.Sc., Top 5%), Merit Graduates (Top 10%) | CUC, 2019                                  |
| • Innovation Scholarship for Graduate (Top 0.2%)                           | Faculty of Graduate Studies, CUC, 2018     |
| • National Scholarship (Top 2%)  | Ministry of Education, China, 2017         |

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## SKILLS

Python, MATLAB, C (Basic)

PyTorch, Tensorflow, Jupyter, CUDA, Git, Keras, Numpy, Scipy, Scikit-learn