Fei Wang

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EDUCATION

University of Toronto, Toronto, ON, Canada
Department of Electrical & Computer Engineering
Ph.D. Candidate, Computer Engineering — Sep 2020 – present

- Cumulative GPA: 3.83/4.00
- Relevant Courses: Statistical Learning (ECE1504), Convex Optimization (ECE1505), Algorithms & Data Structures (ECE1762), Network Softwarization: Technologies and Enablers (ECE1508), Game Theory and Evolutionary Games (ECE1657), Trends in Middleware Systems: Selected Topics and Concepts (ECE1770)

Wuhan University, Wuhan, Hubei, People's Republic of China
Hongyi Honor College
B.Engr., Computer Science and Technology (with honors) — 2016 – 2020

- Cumulative GPA: 3.80/4.00
- Rank: 4/34 (selected from 587 students in the School of Computer Science, Wuhan University)
- Relevant Courses: Advanced Programming Language, Object-Oriented Programming, Data Structure, Design and Analysis of Algorithms, Fundamentals of Computer Systems, Computer Organization and Design, Operating System Design, Software Engineering, Design of Large Applied Software

PUBLICATIONS

JOURNALS

Salma Emara, **Fei Wang**, Baochun Li, Timothy Zeyl, "Pareto: Fair Congestion Control with Online Reinforcement Learning," *in IEEE Transactions on Network Science and Engineering, 2022.*

CONFERENCES

Salma Emara, **Fei Wang**, Isidor Kaplan, Baochun Li, "Ivory: Learning Network Adaptive Streaming Codes," *in the Proceedings of the 30th IEEE/ACM International Symposium on Quality of Service (IWQoS), 2022.*

RESEARCH EXPERIENCE

On the Quality of Model Contributions in Federated Learning
Graduate Student, supervised by Prof. Baochun Li and Prof. Bo Li — May 2021 – Apr 2022
Department of Electrical & Computer Engineering, University of Toronto

- Designed a new aggregation mechanism that uses deep reinforcement learning to dynamically evaluate the quality of model updates, with accommodations for data and device heterogeneity as the training process progresses

Towards Efficient Communication in Multi-Agent Deep Reinforcement Learning
Graduate Student, supervised by Prof. Baochun Li — Sep 2020 – Apr 2021
Department of Electrical & Computer Engineering, University of Toronto

- Equipped agents who collaborate on a deep reinforcement learning task with successive deep neural networks to learn to efficiently communicate with each other while updating control strategies
- Investigated the performance of the proposed learning-based multi-agent communication protocol in a real-world content caching application

Refining Congestion Control Using Deep Reinforcement Learning
Research Assistant, advised by Prof. Baochun Li and Dr. Salma Emara — Sep 2019 – Jun 2020
Department of Electrical & Computer Engineering, University of Toronto

- Refined the expert control policy migrated from our target congestion control protocol in terms of code
- Redesigned the switching mechanism between the expert and the agent control policy, and enhanced the agent's learnability
- Built an RL congestion control environment with an asynchronous RL framework where the agent execution does not block the network sender
- Designed an online training scheme to speed up the convergence of the agent's behaviors and improve its generalizability in new network environment

Rethinking Congestion Control with Deep Reinforcement Learning
Research Assistant, advised by Prof. Yanjiao Chen May 2018 – Jul 2019
School of Computer Science, Wuhan University

- Employed state-of-the-art deep reinforcement learning algorithms to generate congestion control policy
- Widely evaluated the designed scheme and the state-of-the-art TCP variants on emulated and real networks via Mahimahi and Pantheon platforms

TEACHING EXPERIENCE

Teaching Assistant for ECEH1S – ECE Project Apr 2022 – May 2022
Department of Electrical & Computer Engineering, University of Toronto

- Developed a research database web application using Node.js with PostgreSQL

Teaching Assistant for APS105 – Computer Fundamentals Jan 2022 – Apr 2022
Department of Electrical & Computer Engineering, University of Toronto

- Familiarizing with lab facilities & experimental procedures
- Marking laboratories/practicals work, giving students feedback on their coding style
- Invigilation of final exam

SKILLS

Programming/Scripting Language: Python, C, JavaScript, UNIX Shell Scripting, LaTeX, MATLAB
Platforms/Frameworks/Tools: PyTorch, NumPy, Matplotlib, Git, Linux (Ubuntu)

AWARDS & HONORS

- The Edward S. Rogers Sr. Graduate Scholarship, University of Toronto 2020 – 2022
- Excellent Student Cadre, Wuhan University 2018 & 2019
- Special Overseas Scholarship, Wuhan University 2018 & 2019
- Outstanding Student Scholarship, Wuhan University 2016 – 2019