

EVAN (PO-YU) CHEN

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EDUCATION

Purdue University PhD, Elmore Family School of Electrical and Computer Engineering.	<i>Aug. 2022 - Present</i> GPA: 3.97/4.0
National Yang Ming Chiao Tung University Bachelor of Science, Electronics Engineering. (Rank: 2/89)	<i>Sep. 2017 - Jun. 2021</i> GPA: 4.19/4.3 (Last 60: 4.25/4.3)

RESEARCH INTEREST

Machine Learning; Optimization; Communications/Networking; Differentiable Privacy; Federated Learning; Hierarchical Federated Learning (Fog Learning); Large Language Models

PROJECTS

Federated Learning for Network-Aware Systems, Purdue University *Sep. 2023 - Present*
We are designing a new communication method for distributed optimization problems, where specific topological or device-based information can have significant improvement on convergence results. We aim to integrate this concept into Fog Learning, so a more theory-based and systematic method can be used when designing distributed machine learning algorithms on large complicated network systems. The first work on this topic is currently in preparation and will be submitted shortly.

Gradient Tracking on Fog Networks, Purdue University *April. 2023 - Present*
We are aiming to control data heterogeneity on D2D-enabled fog networks using gradient tracking. We derive the first gradient tracking algorithm that is designed for a hierarchical network topology. With two separate tracking terms controlling different layers of the hierarchical network, we can show efficient convergence even when the data distribution is non-i.i.d.

Remote Heart Rate Estimation, National Chiao Tung University *Jan. 2019 - Jan. 2020*
A heart rate prediction model using meta learning approach to achieve State of the Art accuracy. This work is published on The European Conference on Computer Vision and is in cooperation with Realtek Semiconductor Corp.

WORKING EXPERIENCE

Research Assistant *Aug. 2022 - Present*
Advisors: Christopher G. Brinton, ECE, Purdue University

Research Assistant *Jul. 2021 - Dec. 2021*
Advisor: Chen-Yi Lee, Institute of Electronics, National Chiao Tung University

ACADEMIC HONORS

NSF Student Travel Grant for INFOCOM 2024	<i>May. 2024</i>
Ross Fellowship	<i>Aug. 2022</i>
MOST College Student Research Scholarship	<i>Jul. 2020</i>

PEER REVIEWS

Transactions on Mobile Computing (TMC);
IEEE INFOCOM 2024 Workshop: The Third International Workshop on Distributed Machine Learning and Fog Networks (INFOCOM FOGML 2024);

SKILLS

Tools	PyTorch, Tensorflow, Linux, LaTeX, Matlab, C/C++, Swift, Python, Java
Domain Knowledge:	Computer Vision, Information Theory, Wireless Communication, Optimization, Natural Language Processing

PUBLICATIONS

(submitted for review) **Evan Chen**, Shiqiang Wang, and Christopher G. Brinton. "Parameter Tracking in Federated Learning with Adaptive Optimization" International Conference on Machine Learning. PMLR, 2025 (ICML 2025).

(submitted for review) **Evan Chen**, Frank Po-Chen Lin, Dong-Jun Han, and Christopher G. Brinton. "Differentially-Private Multi-Tier Federated Learning: A Formal Analysis and Evaluation" IEEE/ACM Transactions on Networking Special Issue on AI and Networking.

(submitted for review) **Evan Chen**, Shiqiang Wang, and Christopher G. Brinton. "A Hierarchical Gradient Tracking Algorithm for Mitigating Subnet-Drift in Fog Learning Networks" IEEE/ACM Transactions on Networking.

Evan Chen, Frank Po-Chen Lin, Dong-Jun Han, and Christopher G. Brinton. "Differentially-Private Multi-Tier Federated Learning" IEEE International Conference on Communications 2025 (ICC 2025).

Wenzhi Fang, Dong-Jun Han, **Evan Chen**, Shiqiang Wang, and Christopher G. Brinton "Hierarchical Federated Learning with Multi-Timescale Gradient Correction" Advances in Neural Information Processing Systems 2024 (NeurIPS 2024).

Evan Chen, Shiqiang Wang, and Christopher G. Brinton. "Taming Subnet-Drift in D2D-Enabled Fog Learning: A Hierarchical Gradient Tracking Approach." In Proceedings of the 2024 IEEE International Conference on Computer Communications (INFOCOM 2024).

Eugene Lee, Lien-Feng Hsu, **Evan Chen**, and Chen-Yi Lee. "Cross-resolution flow propagation for foveated video super-resolution." In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2023).

Eugene Lee, **Evan Chen**, and Chen-Yi Lee. "Meta-rppg: Remote heart rate estimation using a transductive meta-learner." In Proceedings of the European Conference on Computer Vision. Springer, Cham, 2020 (ECCV 2020).

CONFERENCE TALK

1. "Taming Subnet-Drift in D2D-Enabled Fog Learning: A Hierarchical Gradient Tracking Approach", May 23, 2024 INFOCOM, Vancouver, Canada.