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Seohyeon Cha

Ph.D. student

Summary

My research develops **efficient, trustworthy AI** for **decentralized, resource-constrained** systems. I'm interested in designing methods that preserve reliability under tight compute/memory/latency budgets, device heterogeneity, and non-stationary deployments. Current directions include:

- LLM quantization & speculative decoding for fast, resource-aware inference
- Continual learning in collaborative, privacy-preserving environments
- Task offloading and model onloading for hierarchical edge AI inference

Education

The University of Texas at Austin — Austin, TX
Ph.D. in Electrical and Computer Engineering (GPA: 4.0/4.0) — 2024 - Present
- Advisor: Prof. Haris Vikalo

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon, Korea
M.S. in Electrical Engineering (GPA: 4.17/4.3) — 2022 - 2024
- Advisor: Prof. Joonhyuk Kang

B.S. in Electrical Engineering (GPA: 4.03/4.3, Summa Cum Laude) — 2017 - 2022

Publications

Preprints & Conferences

1. **Seohyeon Cha**, Gustavo de Veciana, and Haris Vikalo, "Joint Model Onloading and Offloading for Hierarchical Multi-Task Inference," submitted, 2025.
2. **Seohyeon Cha***, Huancheng Chen*, and Haris Vikalo, "FedProTIP: Gradient Projection-Based Federated Continual Learning Aided by Task Identity Prediction," submitted, 2025 (*Equal contribution).
3. **Seohyeon Cha**, Honggu Kang, and Joonhyuk Kang, "On the Temperature of Bayesian Graph Neural Networks for Conformal Prediction," in *NeurIPS 2023 Workshop: New Frontiers in Graph Learning*, 2023.
4. **Seohyeon Cha**, Sanghyuk Kim, Jiwan Seo, and Joonhyuk Kang, "Intelligent Surface-aided Transmit-array Antenna in mmWave Communication System with Historical Channel Observation," in *IEEE International Conference on Consumer Electronics-Asia (ICCE-Asia)*, 2022.

Journals

1. Honggu Kang*, **Seohyeon Cha***, and Joonhyuk Kang, "GeFL: Model-Agnostic Federated Learning with Generative Models," *IEEE Transactions on Mobile Computing*, 2025 (*Equal contribution).
2. Honggu Kang, **Seohyeon Cha**, Jinwoo Shin, Jongmyeong Lee, and Joonhyuk Kang, "NeFL: Nested Federated Learning for Heterogeneous Clients," *IEEE Transactions on Mobile Computing*, 2025.

Honors & Awards

- **Best Project Award,** ML on Real World Networks, UT Austin — Fall 2024
  Project: Distributed Continual Learning using Gradient Projection
- **National Science & Engineering Scholarship,** Academic Excellence — 2019 - 2021
- **Korean Governmental Scholarship,** KAIST Graduate — 2022 - 2024
- **Korean Governmental Scholarship,** KAIST Undergraduate — 2017 - 2018

Work Experiences

Research Assistant, UT Austin — 2024 - 2025

Undergraduate Summer Internship, SK Hynix — 2019

Projects

Spectrum Sensing and Signal Classification in 6GHz Band — Sep 2021 - Jan 2024

- Designed and implemented machine learning algorithms for wireless signal classification and spectrum sensing

Surface Defect Detection of Aircrafts Using Object Detection — Jul 2023 - Jan 2024

- Built an object detection pipeline for aircraft surface defect identification using PyTorch

Teaching Experiences

Undergraduate Individual Study Assistant, KAIST — 2023

Teaching Assistant, KAIST

- EE205 Data Structures and Algorithms for Electrical Engineering, Fall 2022
- EE966 M.S. Seminar <Colloquium>, Spring/Fall 2023

Counseling Assistant, KAIST — Sep 2022 - Feb 2023

- Counseled undergraduate/graduate students

Freshman Tutoring, KAIST — 2018 - 2019

- MAS101 Calculus 1, MAS102 Calculus 2

Skills

Languages: English (Fluent), Korean (Native)
Programming: , Python, MATLAB, LaTeX, C++
Tools: PyTorch, HuggingFace, Linux, Git, Pandas