Huancheng Chen

PhD Candidate

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Education

2020–2025 **Ph.D. in Electrical and Computer Engineering**, *University of Texas at Austin*
GPA: 3.97/4.0 Advisor: Haris Vikalo

2020–2023 **M.S. in Electrical and Computer Engineering**, *University of Texas at Austin*
GPA: 3.97/4.0 Advisor: Haris Vikalo

2015–2019 **B.Eng. in Electrical Engineering**, *South China University of Technology(SCUT)*
GPA: 3.90/4.0

Research Interests

Federated Learning, Trustworthy AI, Generative Models, Continual Learning

Publications

[1] **Huancheng Chen**, Haris Vikalo. Recovering Labels from Local Updates in Federated Learning. The International Conference on Machine Learning (ICML), 2024

[2] **Huancheng Chen**, Haris Vikalo. Mixed-Precision Quantization for Federated Learning on Resource-Constrained Heterogeneous Devices. The IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR), 2024

[3] **Huancheng Chen**, Haris Vikalo. Accelerating Non-IID Federated Learning via Heterogeneity-Guided Client Sampling. arXiv, 2023

[4] **Huancheng Chen**, Haris Vikalo. Federated Learning in Non-IID Settings Aided by Differentially Private Synthetic Data. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops **Oral**, 2023

[5] **Huancheng Chen**, Johnny Wang, Haris Vikalo. The Best of Both Worlds Accurate Global and Personalized Models through Federated Learning with Data-Free Hyper-Knowledge Distillation. The International Conference on Learning Representations (ICLR), 2023

[6] Abduallah Mohamed*, **Huancheng Chen***, Zhangyang Wang, Christian Claudel. Skeleton-Graph: Long-Term 3D Motion Prediction From 2D Observations Using Deep Spatio-Temporal Graph CNNs. The International Conference on Computer Vision (ICCV), 2021

Professional Experience

May – August. 2024 **Research Intern**, *SonyAI*, Tokyo, Japan
Project: Enhancing Backward Guidance in Layout-To-Image Generation
- Proposed a novel Layout-To-Images scheme that enables Diffusion models controlling spatial semantics of objects in the generated images without fine-tuning additional modules.

Feb – May. 2024 **Research Intern**, *SonyAI*, Austin, Texas
Project: Forgetting-Resilient Low-Rank Adaptation on Large Pretrained Models
- Proposed a novel continual learning scheme based on low-rank adaptation (LoRA) that enables foundation models fine-tuning on a sequence of downstream tasks avoid of challenge of cataphoric forgetting. One paper has been submitted to NeurIPS2024.

May – Aug. 2022 **Research Intern**, *Toyota*, Mountain View, CA
Project: Data-Free Knowledge Distillation in Non-IID Federated Learning
- Investigated Knowledge Distillation technique in Federated Learning and proposed a data-free KD-based FL algorithm and publiched a paper in ICLR2023.

Jan. – May. 2022 **Research Intern**, *Nokia Bell Lab*, Murray Hill, NJ
Project: Robust Anomaly Detection on Low-Quality Images
- Developed an end-to-end background removal of equipment's images framework based on **U-2-Net**.
- Constructed a highly accurate (90%+) and robust deep network for detecting flaws on images of communication devices.

Teaching Experience

EE351M **Digital Signal Processing**, *Teaching Assistant*, 2022 Fall

CS395T **Convex Optimization**, *Teaching Assistant*, 2022 Spring

EE380L **Data Mining**, *Teaching Assistant*, 2021 Fall

EE422C **Software Design and Implementation II (Java)**, *Teaching Assistant*, 2021 Summer

EE381K **Statistical Machine Learning**, *Teaching Assistant*, 2021 Spring, 2024 Spring

CS395T **Foundation of Predictive Machine Learning**, *Teaching Assistant*, 2020 Fall

Honors

Sept. 2015 **National Encouragement scholarship**, *South China University of Technology*

Sept. 2016 **The First Prize scholarship**, *South China University of Technology*

Skills

Languages English (fluent), Mandarin (native), Cantonese (native), Hakka (native)

Programming Python, Java, C/C++, Bash, SQL, Matlab, LaTeX

Tools Tensorflow, Pytorch, Git, Pandas