HUANCHENG CHEN

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EDUCATION

The University of Texas at Austin (***GPA: 3.96/4.00***) *Austin, TX*
Ph.D in **Electrical and Computer Engineering** *Jan 2020 – May 2025(expected)*
Supervisor: Prof. Haris Vikalo
Research Interests: Federated Learning, Distributed Optimization, Reinforcement Learning
Coursework: Statistical Machine Learning, Large Scale Optimization, Data Mining, Stochastic Control Theory, Advanced Computer Vision, Numerical Optimization for Graphics and AI, Online Learning, Distributed Systems, Graphical Models
South China University of Technology (*GPA: 3.92/4.00, Rank: 2/304*) *Guangzhou, China*
B.Eng in **Electrical Engineering,** Minor in **Computer Science** *Sept 2014 – June 2019*
Coursework: Data Structure and Algorithm, Operating System, Database Technology, Computer Network

PUBLICATION

Abduallah Mohamed, **Huancheng Chen**, Zhangyang Wang, Christian Claudel, ***Skeleton-Graph: Long-Term 3D Motion Prediction From 2D Observations Using Deep Spatio-Temporal Graph CNNs*.** ICCV2021 Workshop
Huancheng Chen, Haris Vikalo, ***Federated Learning in Non-IID Settings Aided by Differentially Private Synthetic Data.*** CVPR2023 Workshop (oral)
Huancheng Chen, Haris Vikalo, ***The Best of Both Worlds: Accurate Global and Personalized Models through Federated Learning with Data-Free Hyper-Knowledge Distillation.*** ICLR2023

RESEARCH & PROJECT

Federated Learning in Non-IID Settings Aided by Differentially Private Synthetic Data *June 2021 – May 2022*

- Built local **Variational Auto-Encoders**, utilizing the encoder to map training images representations and generating **Differential Private** version of means of representations, then shared the means to the server.
- The server matches the clients to share their means of representations and the benefiting clients synthesizes data for their locally missing or underrepresented classes to help improve local training in heterogeneous scenario.

3D Human Motion Prediction From 2D Observations Using Graph CNNs *Jan 2021 – May 2021*

- Constructed a deep **spatio-temporal graph CNNs** model to predict next *T'* step 3D human pose skeletons given last *T* step 2D key-points and RGB images. Connectivity and distance/angle restrictions between different joints were considered which improved the model performance a lot.
- Conducted experiments with **GTA-IM** and **PROX** datasets and measured prediction error in term of Mean Per Joint Position Error (MPJPE). Our model showed about 30% improvement from the SOTA.

WORK EXPERIENCES

Toyota IT Center *Mountain View, CA*
- Research Intern *May.2022- Aug.2022*

- Investigated **Knowledge Distillation** (KD) technique in **Federated Learning** (FL) and proposed a **data-free** KD-based FL algorithm with bilateral improvement on global and local test accuracy among heterogeneous clients.

Nokia Bell Lab *Murray Hill, NJ*
- Research Intern *Jan.2022- May.2022*

- Constructed a highly accurate (90%+) and robust deep network for detecting flaws on images of communication equipments.
- Developed an end-to-end background removal of equipment's images framework based on **U-2-Net,** achieving close performance to commercial software.

SKILLS

Computer Languages: Python, Java, C/C++, SQL, LaTeX
Technologies: Pytorch, Tensorflow, Linux, AWS, Google Cloud, Matlab, Git