Xiwen (Christina) Wei

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Objective

Seeking machine learning research intern positions with 2 years of hands-on ML research experience in continual learning, trustworthy AI (machine unlearning, AI fairness), and Large Language Models.

Education

PhD in Electrical and Computer Engineering *University of Texas at Austin* **Austin, TX** *Aug 2023-Present*
Advisor: Radu Marculescu (System Level Design Group)
GPA: 3.92/4.00 (Cockrell School of Engineering PhD Fellowship)

BSE in Electrical Engineering *University of Michigan, Ann Arbor* **Ann Arbor, MI** *Aug 2021-May 2023*
Summa Cum Laude, Dean's List, James B. Angell Scholar (GPA: 4.00/4.00)

BSE in Electrical and Computer Engineering *Shanghai Jiaotong University* **Shanghai, China** *Sep 2019-Aug 2023*
Outstanding Graduate of Shanghai Jiaotong University

Professional Experience

Graduate Research Assistant *System Level Design Group* **Austin, TX** *08/2023 - present*
- Working on **machine unlearning for generative models**, with a focus of fairness and sampling schedules optimization [3].
- Designed an efficient online task-free **continual learning** algorithm with low-rank adaptation in foundation **vision transformers** [1].
- Analyzed the fairness implications of **machine unlearning** in **diffusion models**. Developed a Bayesian optimization method to reduce model bias, balancing **privacy** preservation and **fairness** [2].

Research Fellow, *University of Michigan Transportation Research Institute* **Ann Arbor, MI** *01/2022 - 04/2023*
- Developed a 3D parametric human model that represents diverse body types, enabling personalized and adaptive safety designs.
- Developed statistical models for thoracic spine geometry in MATLAB and R using Generalized Procrustes Analysis, Principal component analysis. Developed and analyzed **feedforward neural networks** to improve the predictive model.
- Processed medical images using **Mimics and HyperMesh** to quantify 3D geometries of human skeletons and internal organs.

Undergraduate Research Assistant, *Michigan Integrated Circuits Lab(MICL)* **Ann Arbor, MI** *05/2022 - 08/2022*
- Designed a PID-based control algorithm in C and simulated the timer module in Michigan Micro Mote (M3) miniature sensor chip in MATLAB. Reduced timing error under extreme weather conditions by **83%**.
- Developed Python scripts (**PySerial, Pandas, Numpy**) for automated hardware verification.

Supply Chain Engineer Intern, *Soudronic AG* **Guangzhou, Guangdong, China** *12/2020 - 05/2021*
- Enhanced inventory tracking and order processing efficiency by developing an inventory management system using Python (**Pandas, Scikit-learn**) & **SQL**. Integrated real-time data analytics into the inventory management system for proactive decision-making.

Publication

[1] **Xiwen Wei**, Guihong Li, and Radu Marculescu. *Online-LoRA: Task-free Online Continual Learning via Low Rank Adaptation*. Accepted to IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2025.

[2] **Xiwen Wei**, Guihong Li, and Radu Marculescu. *Fairness Implications of Machine Unlearning: Bias Risks in Removing NSFW Content from Text-to-Image Models*, NeurIPS 2024 Workshop on Regulatable ML.

[3] **Xiwen Wei**, Guihong Li, and Radu Marculescu. *Post-Training Sampling Step Scheduling: Enhancing Image Quality in Unlearning for Diffusion Models*, Manuscripts in preparation.

Projects

Fake News Detection Using Large Language Models *University of Texas at Austin* *Spring 2024*
- Designed a fake news detection pipeline based on **LLMs** with Chain of Thought (CoT). Achieved a **12%** improvement in accuracy with zero-shot-CoT over traditional NLP techniques, enhancing interpretability and detection performance.

Decentralized Federated Learning on Real-World Networks *University of Texas at Austin* *Fall 2023*
- Investigated the impact of network structures on decentralized **federated learning** (DeceFL) algorithms in computer vision tasks.
- Identified key effects of network topology on convergence speed and accuracy, providing insights to optimize algorithm performance.

Skills

- **Machine Learning & AI:** Generative AI, Vision Foundation Models, Large Language Models (LLM), Trustworthy AI, Machine Unlearning, Time Series Forecasting, Continual Learning, Federated Learning, Neural Networks.
- **Deep Learning Frameworks:** PyTorch, TensorFlow, TFLite, Keras, Scikit-learn
- **Programming Languages:** Python, C, C++, MATLAB, Assembly, Bash, SQL, SystemVerilog