Xiwen (Christina) Wei

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Education

PhD in Electrical and Computer Engineering *University of Texas at Austin* **Austin, TX** *Aug 2023-Present*
GPA: 3.83/4.00 (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 **multimodal continual learning**, with a focus of preserving zero-shot generalization of **multimodal LLMs** [1].
- Designed an online task-free **continual learning** algorithm utilizing **efficient fine-tuning** of **foundation vision transformers** [2].
- Analyzed the fairness implications of **machine unlearning** in **diffusion models**. Developed a Bayesian optimization method to reduce model bias, balancing **privacy** preservation and **fairness** [3].

PhD Research Associate *Advanced Micro Devices, Inc. (AMD)* **Austin, TX** *05/2025 - 12/2025*

- Defined and led an end-to-end research project on fine-tuning of a **37B unified multimodal model**, targeting modality imbalance in interleaved text–image generation.
- Designed and implemented distributed supervised fine-tuning pipelines using **PEFT (LoRA)**, scaling efficiently across **8× MI300X GPUs** on AMD HPC clusters.
- Proposed a Pareto-based modality balancing algorithm, achieving up to **40%** improvement in image generation performance with minimal degradation in text generation quality.

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**, Mustafa Munir, and Radu Marculescu. *Mitigating Intra- and Inter-modal Forgetting in Continual Learning of Unified Multimodal Models*. Accepted by The Thirty-ninth Annual Conference on Neural Information Processing Systems (NeurIPS), 2025.

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

[3] **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.

[4] Tianrui Hu, Dimitrios Liakopoulos, **Xiwen Wei**, Radu Marculescu, Neeraja J Yadwadkar. *Simulating rumor spreading in social networks using llm agents*, WMAC 2025: AAAI 2025 Workshop on Advancing LLM-Based Multi-Agent Collaboration.

[5] Mustafa Munir, Md Mostafijur Rahman, **Xiwen Wei**, Yuedong Yang, Radu Marculescu. *SearchViG: Optimal Vision GNNs via Ramanujan Spectral Optimization*. Accepted by The Fourth Learning on Graphs Conference (LOG), 2025.

[6] Mustafa Munir, **Xiwen Wei**, Harsh Goel, Minkyu Choi, Kartikeya Bhardwaj, Paul N. Whatmough, Sandeep P. Chinchali, Radu Marculescu. *ObjectAlign: Neuro-Symbolic Object Consistency Verification and Correction*, Under review.

[7] Yuedong Yang, **Xiwen Wei**, Mustafa Munir, Radu Marculescu. *Fuel Gauge: Estimating the Length of Chain-of-Thought a priori for Large Multi-modality Models*, Under review.

Skills

- **Machine Learning & AI:** Generative AI, Multimodal Large Language Models (MLLM), Continual Learning, Large Language Models (LLM), LLM-based agents, Time Series Forecasting, Federated Learning, Neural Networks.
- **Deep Learning Frameworks:** PyTorch, TensorFlow, HuggingFace Transformers, PEFT, NumPy, Pandas, TFLite, Keras, Scikit-learn
- **Programming Languages:** Python, C, C++, MATLAB, Assembly, Bash, SQL, SystemVerilog