LIXUAN WEI (SELINA)

(+1) 8573318757 | lwei@g.harvard.edu | LinkedIn

EDUCATION

Harvard University, Massachusetts, U.S.A *Sep. 2025 – May 2027 (Expected)*
Master in Computational Science and Engineering

Wuhan University, Wuhan, China *Sep. 2021 – Jun. 2025*
Bachelor of Engineering in Electronic Information Engineering (AI Program) | ***GPA: 3.86/4.0*** | ***Ranking: 5%***

University of Notre Dame, Indiana, U.S.A *Jul. 2024 – Sep. 2024*
Summer Research Intern, Mentor: Prof. Yiyu Shi

EXPERIENCE

Advertising Algorithm Team, Xiaohongshu (Rednotes), Shanghai, China *Mar. 2025 -- Jun. 2023*
Machine Learning Engineering Intern, ***Tech****: Tensorflow, Git, Docker, Scikit-learn, Pandas, AWS, Spark,, Kafka, Matplotlib*

- Designed a production-grade **Calibration Tower** to resolve severe prediction bias (PAOA of 0.41) from a delayed modeling framework. By systematically benchmarking alternatives and implementing **Platt Scaling**, this solution drove a **+1.21% eCPM** lift and a **-1.83% CPA** reduction in A/B tests, while improving model stability by 68% (PAOA std. dev. ↓ **from 0.25 to 0.08**).
- Engineered a **Temporal Interest Network** (TIN) to enhance user interest modeling in a large-scale recommendation system (**20M+** DAU). By implementing dual temporal-positional encoding and a target-aware attention mechanism, this model drove a **+2.13% eCPM** lift and a **-1.65% CPA** reduction in A/B tests.

Research Assistant, University of Notre Dame, IN, U.S.A, Mentor: Prof. Yiyu Shi, *Mar. 2024 - Sep. 2024*
Fairness in Medical and Healthcare Input for Large Language Models, ***Tech****: Python, PyTorch, Pandas, Transformers, Huggingface, Pandas,* Librosa, Torchaudio

- Identified fairness issues in speech recognition and **large language model** systems for individuals with speech related disorders, evaluated optimal pairings for edge environments with limited resources to mitigate impacts.
- Conducted a large-scale benchmark of 15 **auto speech recognition (ASR)** and 23 LLM models, uncovering systemic performance bias against speech impairments users and employing **causal tracing** to attribute the bias's origin within the ASR-LLM pipeline.

Research Assistant, Wuhan University, Wuhan, China, Mentor: Prof. Lei Yu *Jun. 2023 – Mar. 2025*
All-in-Focus Seeing Through Occlusion with Event and Frame | ***Tech****: Python, Pytorch, Numpy, Ros, OpenCV, Torchvision*

- Architected an end-to-end **PyTorch** pipeline for representation learning to see through severe occlusions, applying novel signal processing and **feature engineering** to fuse sparse, real-time event data with dense, static image frames.
- Engineered a deep learning model leveraging **Swin-Transformer**, **dynamic convolutions**, and a **multi-task learning** framework by designing a composite loss to balance competing accuracy and perceptual quality metrics.
- Independently owned the end-to-end model lifecycle, building a custom dataset with **data augmentation** (1,700+ samples) and outperforming SOTA with a **90% reduction** in depth prediction error and **5dB** in image reconstruction PSNR gain.

Versatile Event Transformer for Human Behavior Analysis | ***Tech****:Python, Pytorch, Numpy, OpenCV, Torchvision, Parquet, Matplotlib*

- Designed and implemented an end-to-end, multi-task **Spatio-temporal Transformer** to concurrently perform classification and signal regression on high-frequency events, utilizing a hybrid loss combining **KL-Divergence** and Pearson Correlation.
- Built a novel voxel-guided attention mechanism where a custom **Temporal Attention Module** fuses fine-grained local patterns from a **3D CNN** with global attention guided by sparse voxel data.
- Built a custom data processing pipeline to simulate and pre-process a large-scale (>4,000 samples) event-stream dataset from raw video, transforming sparse, asynchronous events into dual spatio-temporal representations for efficient model training.

SKILLS SUMMARY

- **Computer Skills:** Python, Bash, SQL, C/C++, Linux
- **Frameworks:** Scikit-Learn, Pytorch, Scipy, XGBoost, TensorFlow, Keras, Matplotlib,
- **Tools:** Git, AWS, Jupyter Notebook, Visual Studio, Pycharm, Blender
- **Soft Skills:** Communication,Teamwork, Writing, Public Speaking, Time Management, Critical Thinking

PUBLICATIONS (*: EQUAL CONTRIBUTION)

- **Lixuan Wei**, Yiche Liu, Kejing Xia, Huijiao Wang, Lei Yu, "All-in-Focus Seeing Through Occlusion with Event and Frame", Chinese Conference on Pattern Recognition and Computer Vision (PRCV 2025)
- Yichen Liu*, **Lixuan Wei***, Yufei Guo, Lei YU, "All-in-Focus Imaging from Events with Occlusions", IEEE Transactions on Multimedia.
- Kejing Xia*, **Lixuan Wei***, Lei Yu: "A Spatio-temporal Event Transformer on Versatile Tasks for Human Behavior Analysis", International Joint Conference on Artificial Intelligence Workshop (IJCAI Workshop).
- Yiyu Shi, Ruiyang Qin, Haoxinran Yu, **Lixuan Wei**, Yuxuan Liu, Dancheng Liu, Chenhui Xu, Jiajie Li, Gelei Xu, Ahmed Abbasi, Jinjun Xiong, Xiufan Yu, Zhi Zheng, "Serving Individuals with Language Impairments using Automatic Speech Recognition Models and Large Language Models: Challenges and Opportunities", Nature Medicine (under review)