Jintang Xue

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Summary

PhD student in ECE @ USC, building LLM-powered multimodal systems for 3D scene understanding and QA, while also developing efficient and interpretable ML methods for NLP and medical AI applications. Seeking MLE / Applied Scientist internship.

Research Interests

Multimodal and Language-Centric Reasoning: Combining vision and language with LLMs for grounded reasoning, scene understanding, and QA.

Efficient and Interpretable Machine Learning: Developing compact, explainable models for NLP, 3D perception, and medical image processing.

Education

University of Southern California — Los Angeles, United States
Ph.D. Student in Electrical Engineering, Minor area in Computer Science — 08/2023 - 05/2027 (expected)
Advisor: Professor C.-C. Jay Kuo

University of Southern California — Los Angeles, United States
M.S. in Electrical Engineering (Honors) — 08/2021 - 05/2023

Shanghai University — Shanghai, China
B.S. in Electrical Engineering — 09/2017 - 06/2021

Selected Publications (Full list at: [Google Scholar])

[1] **Jintang Xue**, Ganning Zhao, Jie-En Yao, Hong-En Chen, Yue Hu, Meida Chen, Suya You, C.-C. Jay Kuo, "Descrip3D: Enhancing Large Language Model-based 3D Scene Understanding with Object-Level Text Descriptions, " *Accepted at WACV 2026*, arXiv preprint arXiv:2507.14555.

[2] **Jintang Xue**, Yun-Cheng Wang, Chengwei Wei, C.-C. Jay Kuo, "Word Embedding Dimension Reduction via Weakly-Supervised Feature Selection, " *APSIPA Transactions on Signal and Information Processing: Vol. 13: No. 1, e37. http://dx.doi.org/10.1561/116.20240046*.

[3] **Jintang Xue**, Yun-Cheng Wang, Chengwei Wei, Xiaofeng Liu, Jonghye Woo, C.-C. Jay Kuo, "Bias and Fairness in Chatbots: An Overview, " *APSIPA Transactions on Signal and Information Processing: Vol. 13: No. 2, e102, 2024. http://dx.doi.org/10.1561/116.00000064*.

[4] Min Zhang*, **Jintang Xue***, Pranav Kadam, Hardik Prajapati, Shan Liu and C.-C. Jay Kuo, "A tiny machine learning model for point cloud object classification," *APSIPA Transactions on Signal and Information Processing, Vol. 12, No. 1, e35, 2023*. **(* denotes equal contribution.)**

[5] Yun-Cheng Wang, **Jintang Xue**, Chengwei Wei, and C.-C. Jay Kuo, "An overview on generative AI at scale with edge-cloud computing," *IEEE Open Journal of the Communications Society, Vol. 4, pp. 2952-2971, 2023*.

Awards

USC Viterbi Research Assistantship/Teaching Assistantship — 08/2023 - Present

USC EE MS honors program — 01/2023 - 05/2023

Teaching Experience

Teaching Assistant

EE569: Introduction to Digital Image Processing (Graduate Level) — Spring 2025

EE510: Linear Algebra for Engineering (Graduate Level) — Fall 2024

EE559: Machine Learning I: Supervised Methods (Graduate Level) — Spring 2024

Selected Research Projects

Multimodal Reasoning in 3D Scenes with Language and Vision 09/2024 - Present

- Developed a multimodal pipeline combining 2D multi-view images, 3D object features, and LLM-generated object-level descriptions.
- Injected language through a dual-level approach into 3D scene representations for grounded QA, captioning, and spatial reasoning.
- Outperformed prior LLM-based and expert models on five public 3D reasoning benchmarks (e.g., ScanRefer, ScanQA), demonstrating strong generalization and interpretability.

Interpretable and Compact Language Models for Domain-Specific Generation 04/2024 - Present

- Proposed WordFS, a weakly supervised feature selection framework for reducing the dimensionality of word embeddings while preserving semantic quality.
- Designed and began prototyping a compact generative language model for domain-specific next-word prediction, aiming to balance performance and interpretability.

Bias and Fairness in Modern Chatbot Systems 05/2023 - 02/2024

- Conducted a comprehensive review on social bias in LLM-based assistants.
- Identified systemic risks and design principles for fair, interpretable chatbot development.

Lightweight Models for Point Cloud Object Classification 05/2022 - 08/2023

- Developed Green-PointHop and S3I-PointHop: rotation-invariant, interpretable 3D classifiers.
- Simplified multi-hop to single-hop architectures for mobile and edge deployment.
- Benchmarked on ModelNet and real-world 3D datasets.

Supporting Clinical AI Projects (Collaborative) 08/2022 - Present

- Contributed to model design, tuning, and experimental evaluation in ML-based prostate MRI segmentation and diagnosis.
- Co-authored 5+ publications in CMIG, APSIPA, NEJM AI (under review), and Journal of Urology.
- Applied interpretable and lightweight models (e.g., Green Learning, PointHop) for clinical deployment.

Technologies

Languages: Mandarin (Native), English (Proficient).

Programming Languages: Python, Java, C/C++, Matlab.

Tools: Git, PyTorch, TensorFlow, Huggingface, scikit-learn, XGBoost, nltk, spaCy, OpenCV, Neo4j, LaTeX.