Xu Zheng

xzhen019@fiu.edu https://aslanding.github.io/ https://github.com/AslanDing

EDUCATION

Florida International University **Miami, FL**
Ph.D. in Computer Science, GPA: 3.97/4.0 *Jan. 2023 - Aug. 2026(Expected)*

University of Electronic Science and Technology of China **Chengdu, China**
M.S. in Control Science and Engineering, GPA: 3.23/4.0 *Sep. 2018 - Jun. 2021*

Chongqing University **Chongqing, China**
B.S. in Electronic Science and Technology, GPA: 3.59/4.0 *Sep. 2018 - Jun. 2021*

EXPERIENCE

DSSS, NEC Laboratories America, Inc **Princeton, NJ**
Research Scientist Intern *May 2024 - Aug. 2024*

- Developed an anomaly detection system leveraging both time-series and textual data, enhancing performance by improving cross-modal interactions.
- Designed and implemented a multi-modal fusion strategy that integrates three complementary detection methods across individual modalities and their joint representations.

Department of Image Algorithm, ZTE **Chengdu, China**
Algorithm Engineer *July 2021 - Jan. 2023*

- Built an automated data collection pipeline and designed deep neural networks for image restoration in Under-Display Camera (UDC) systems.
- Applied pruning and quantization techniques to optimize Raw Image Denoising Networks, reducing model size and improving efficiency.
- Deployed and validated optimized neural networks on Android devices using TensorFlow Lite and Qualcomm Snapdragon QNN frameworks.

PROJECTS

Graphs Enhance LLMs & Agents *Jan. 2025 - Present*

- Proposed LMotifs, an explainable framework for detecting machine-generated texts by modeling linguistic patterns as graph motifs, improving interpretability and robustness in LLM text forensics.
- Introduced Environment Copilot, a graph-based diagnostic framework for LLM agents, which models action trajectories as probabilistic graphs to identify error-prone patterns, achieving a 14.7% average improvement in success rate on long-horizon tasks.
- Investigating graph-enhanced scaling laws for LLM agent inference, aiming to systematically improve efficiency, reliability, and decision-making under complex, multi-step environments.

Explainable AI for Scientific Discovery *Jan. 2024 - Present*

- Compiled and released SF^{2}Bench, a large-scale dataset and benchmark for compound flood forecasting in South Florida, enabling fair comparison of data-driven models.
- Planned to integrate explainable AI methods with scientific modeling to improve interpretability and trustworthiness in compound flood prediction.
- Aimed to leverage XAI insights to guide scientific discovery, providing an actionable understanding of key factors driving flood risks and enhancing decision-making in climate resilience.

Robust Evaluation Framework for XAI *Sept. 2023 - Feb. 2025*

- Proposed R-Fidelity, a robust evaluation method for assessing the faithfulness of explanations in Graph Neural Networks (GNNs).
- Developed F-Fidelity, a unified framework for robustly evaluating explanation faithfulness across multiple domains, including images, time series, and NLP.
- Advanced the reliability of XAI evaluation by introducing domain-agnostic metrics and benchmarks, enabling fair comparison of explainability methods in real-world settings.

3D Human Mesh Generation *May 2019 - May 2021*

- Investigated human mesh generation from single images using Conditional GANs and optimization-based methods on the SMPL model.
- Explored multi-view constraint techniques to improve human mesh recovery accuracy.
- Estimated 3D human mesh poses by leveraging 2D keypoints and weak depth supervision.

SELECTED PAPERS

- **Xu Zheng**, Farhad Shirani, Zhuomin Chen, Chaohao Lin, Wei Cheng, Wenbo Guo, Dongsheng Luo,"F-Fidelity: A Robust Framework for Faithfulness Evaluation of Explainable AI", **ICLR**, 2025.
- **Xu Zheng**, Tianchun Wang, Wei Cheng, Aitian Ma, Haifeng Chen, Mo Sha, Dongsheng Luo, "Parametric Augmentation for Time Series Contrastive Learning", **ICLR**, 2024, **IJCAI workshop AI4TS (Best Paper Award)**, 2023.
- **Xu Zheng***, Farhad Shirani*, Tianchun Wang, Wei Cheng, Zhuomin Chen, Haifeng Chen, Hua Wei, Dongsheng Luo, "Towards Robust Fidelity for Evaluating Explainability of Graph Neural Networks", **ICLR**, 2024.
- **Xu Zheng**, Tianchun Wang, Samin Yasar Chowdhury, Ruimin Sun, Dongsheng Luo, "Unsafe Behavior Detection with Adaptive Contrastive Learning in Industrial Control Systems", IEEE European Symposium on Security and Privacy **Workshops, EuroS&PW**, 2023.
- **Xu Zheng**, Yali Zheng, Shubing Yang, "Generating Multiple Hypotheses for 3D Human Mesh and Pose using Conditional Generative Adversarial Nets", **ACCV**, 2022.
- **Xu Zheng**, Zhuomin Chen, et, al, Dongsheng Luo, "Environment Copilot: A Graph-based Framework for Action Error Diagnosis and Decision", Under Review, 2025.
- **Xu Zheng**, Chaohao Lin, et, al, Dongsheng Luo, "SF^{2}Bench: Evaluating Data-Driven Models for Compound Flood Forecasting in South Florida", arXiv Preprint, 2025.
- **Xu Zheng**, et al, Wei Cheng, Dongsheng Luo,"LM^{2}OTIFS: An Explainable Framework for Machine-Generated Texts Detection", arXiv Preprint, 2025.
- **Xu Zheng**, et. al, Dongsheng Luo,"PAC Learnability under Explanation-Preserving Graph Perturbations", arXiv Preprint, 2024.
- Sipeng Chen, **Xu Zheng**, Zeda Yin, Qiang Chen, Yuepeng Li, Jason Liu, Dongsheng Luo, "Adaptive Dice Loss for Extremely Imbalanced Segementation in Wetland Delineation", **Workshop at ICLR**, 2025.
- Zichuan Liu, Tianchun Wang, Jimeng Shi, **Xu Zheng**, et. al, Dongsheng Luo, "TimeX++: Learning Time-Series Explanations with Information Bottleneck", **ICML**, 2024
- Zhuomin Chen, Jingchao Ni, Hojat Allah Salehi, **Xu Zheng**, Esteban Schafir, Farhad Shirani, Dongsheng Luo,"Explanation-Preserving Augmentation for Semi-Supervised Graph Representation Learning", arXiv Preprint, 2024.
- Minghao Lin, Minghao Cheng, Yueqi Chen, **Xu Zheng**, Dongsheng Luo, Huajiang Chen, "CLExtract: An End-to-End Tool Decoding Highly Corrupted Satellite Stream from Eavesdropping", **Black Hat USA Arsenal**, 2023.

SKILLS

Programming Languages: Python, Java, C/C++, Latex
Programming Tools: Pytorch, Tensorflow, PyG, OpenCV, Git

Languages: English, Chinese(Native)

SUMMARY

Applied scientist and ML engineer with experience designing and deploying AI solutions in **computer vision, anomaly detection, and multi-modal learning**. Skilled in **deep learning optimization, graph-based modeling, and time-series forecasting**, with a track record of delivering production-ready systems on **TensorFlow Lite and Snapdragon QNN**. Passionate about building scalable, interpretable AI that drives real-world impact.