Lujun Zhai

Research Assistant Professor,
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Education

Ph.D., Electrical and Computer Engineering, Prairie View A&M University — *Aug.2023*

M.S., Electrical and Computer Engineering, Prairie View A&M University — *Dem.2017*

B.S., Electrical Engineering, University of Jinan, China — *Jun. 2012*

Appointments

Research Assistant Professor at Prairie View A&M University. — *Jan.2026 - **Present***

Postdoctoral Researcher at Prairie View A&M University. — *Oct.2023 –Jan.2026*

Research Assistant at Prairie View A&M University. — *Jan.2021-Aug. 2023*

Project Engineer at SOAP Engineering, LLC, Houston — *Jan.2018- Jan.2021*

Teaching & Tutoring & Presentations

Course Teaching and development at PVAMU (2022- Present)

- **Teaching courses at PVAMU:** ELEG 4330 Intro to Digital Design; ELEG 4339 Computer Organization; ELEG 6365 High-Performance Computing.
- **Developed AI training modules on a remote HPC clusters** using the ACCESS-based Texas A&M HPRC platform to provide hands-on, no-cost training on diverse HPC platforms.
- **Developed chip tape-out and fabrication modules** for the Digital Design course.

Mentoring

- Guided students in thesis/dissertation research and paper publications on **AI model development and AI-on-Chip** applications, including literature review, coding, troubleshooting, and manuscript revision.
    - Thesis & Publication, Enrique Mateo, "A Systematic Study of Depth-Aware Text-to-Image Generation for Underwater Object Detection", IEEE Southest 2026.
    - Thesis & Publication, Tarek Aziz, "Effective Data Augmentation Strategies for Small Object Detection", IEEE ICIP2026, under review.
    - Thesis & Publication, Clivano J. Rolle, "An Empirical Study on Underwater Image Enhancement for Robust Instance Segmentation", IPCV 2025.
- Mentored students in **integrated circuit design, chip tape-out** and **fabrication.**
    - HBCU Chips 2026, FPGA-based acceleration for artificial intelligence workloads.

Recent Presentations and other activities

- Hosted five workshops on AI specialized computing platforms for cybersecurity and cyberinfrastructure
- Presented at ICCCV Workshops 2025, Hawaii, "*A Systematic Study of Depth-Aware Text-to-Image Generation for Underwater Object Detection*".
- Apple Park Convening, 2024, "Chip Design Tapeout Education Module Review".

Core Technical Skills

- AI/M Model development: CNN, Transformer, GAN, Diffusion.
- Computer Vision, HPC, VLSI (chip design).
- AI Frameworks: PyTorch, Tensorflow, Coffe. OS: Linux, Windows.
- Programming Languages: Python, C, Java, R, ladder logic programming.
- Database: MySQL, SQL. Tools: Colab, Jupyter Notebook, Pycharm, Matlab, Simulink.

Recent Publications

- A Systematic Study of Depth-Aware Text-to-Image Generation for Underwater Object Detection, IEEE SoutheastCon 2026, **Lujun Zhai**, Enrique Mateo, Suxia Cui.
- Large-Scale Empirical Image Enhancement Studies with Diverse HPC systems, WHPC (SC25), **Lujun Zhai**, Suxia Cui.
- An Empirical Study on Underwater Image Enhancement for Robust Instance Segmentation, IPCV2025, **Lujun Zhai**, Clivano J. Rolle, Suxia Cui.
- TransCycleGAN: An approach for remote sensing image super-resolution, IEEE SSIAI 2024, **Lujun Zhai**, Yonghui Wang, Suxia Cui, et al.
- *Historical Blurry Video-based Face Recognition, MDPI Journal of Imaging. 2024 Sep 20;10(9):236*, **Lujun Zhai**, Suxia Cui, Song Wang, Jun Zhou, and Greg Wilsbacher.
- GA-Net: Global-aware Attention-guided CNN for Food Image Classification, IEEE AIIOT2024, Alvin Wang, **Lujun Zhai**. **Awarded **Best Paper****.
- Porting AI/ML models to intelligence processing units (ipus). In Practice and Experience in Advanced Research Computing, PEARC 23, page 231–236, **Lujun Zhai**, Abhinand Nasar, Zhenhua He, et al.
- A comprehensive review of deep learning-based real-world image restoration. IEEE Access, 11:21049–21067, 2023, **Lujun Zhai**, Yonghui Wang, Suxia Cui, et al.
- Enhancing underwater image using degradation adaptive adversarial network. IEEE ICIP 2022, pages 4093–4097, 2022, **Lujun Zhai**, Yonghui Wang, Suxia Cui, et al.