Yangxiao Lu

469-600-9993 | Yangxiao.Lu@utdallas.edu | Linkedin | Github| Homepage

Education

The University of Texas at Dallas — Richardson, Texas
Doctor of Philosophy in Computer Science, GPA 3.96 — *Aug. 2020 – May 2025(expected)*

The University of Texas at Dallas — Richardson, Texas
Master of Science in Statistics, GPA 3.96 — *Aug. 2019 - May 2020*

China University of Petroleum, Beijing — Beijing, China
Bachelor of Science in Ocean oil and gas engineering, GPA 3.28 — *Sep. 2013 - June 2018*

Experience

Research Assistant — May 2021 – Present
Intelligent Robotics and Vision Lab at UT Dallas, Advisor: Nicholas Ruozzi and Yu Xiang — *Richardson, TX*

- Proposed NIDS-Net, a unified novel instance detection and segmentation framework that outperformed current state-of-the-state methods, achieving notable improvements of **22.3, 46.2, 10.3, and 24.0** AP across four detection datasets. Achieved *1st place* in the global BOP challenge. (Under review)
- Designed a novel robotic system for improving unseen object instance segmentation by multi-object tracking and video object segmentation via long-term robot interaction, leading to first-author publication and oral presentation at RSS 2023. Got media coverage
- Improved real-world image segmentation and achieved *state-of-the-art* results through a designed transfer learning strategy. Demonstrated remarkable Boundary F-measure improvement from 65.1 to 89.3 on real-world images
- Proposed a new vision **Transformer** architecture to combine feature representation and clustering for instance segmentation, achieving *state-of-the-art* performance: 87.3 Boundary F-measure on RGB-D OCID dataset and 21.1% improvement on RGB images. Ranked first with the highest grasping success rate on the real-world SceneReplica robotics benchmark. Published in ICRA 2024
- Elevated generic deep neural network frameworks through log-supermodular CRFs, validated across diverse CV tasks: stereo estimation, semantic segmentation, and image colorization. E.g., achieved a significant 9.7% enhancement in stereo matching. Published in NeurIPS 2022

Selected Publications (6 out of 8)

Lu, Y., Guo, Y., Ruozzi, N. and Xiang, Y., 2024. Adapting Pre-Trained Vision Models for Novel Instance Detection and Segmentation. In arXiv, 2024.

Khargonkar, N., Allu, S.H., **Lu, Y.**, et al., SCENEREPLICA: Benchmarking Real-World Robot Manipulation by Creating Reproducible Scenes. In International Conference on Robotics and Automation (ICRA), 2024.

Howard H., **Lu, Y.**, et al., RISeg: Robot Interactive Object Segmentation via Body Frame-Invariant Features. In International Conference on Robotics and Automation (ICRA), 2024.

Lu, Y., et al., Ruozzi, N. and Xiang, Y., Self-Supervised Unseen Object Instance Segmentation via Long-Term Robot Interaction. In Robotics: Science and Systems (RSS), 2023.

Lu, Y., Chen, Y., Ruozzi, N. and Xiang, Y., 2022. Mean shift mask transformer for unseen object instance segmentation. In International Conference on Robotics and Automation (ICRA), 2024.

H. Xiong, **Lu, Y.**, N. Ruozzi, Boosting the Performance of Generic Deep Neural Network Frameworks with Log-supermodular CRFs. Neural Information Processing Systems (NeurIPS), 2022.

Projects

Practical ML/AI Implementations | *China University of Petroleum, Beijing* — Oct. 2018 – July 2019

- Developed Keras DNN model with 90% accuracy for precise recovery factor predictions. Published in SPE/IATMI Asia Pacific Oil & Gas Conference and Exhibition 2020.
- Developed PyTorch CNN model for high-noise crack segmentation with 67.86% mIoU.

Technical Skills

Languages: Python, Java, C/C++, SQL, JavaScript, HTML/CSS, PHP, R, Matlab
Technologies: PyTorch, Keras/TensorFlow, Detectron2, Hugging Face, OpenCV, Scikit-learn, MySQL, MongoDB, Git, Hadoop, Spark, Docker
Certifications: Advanced Udacity Data Analyst Nanodegree (2018)
Others: Deep Learning, Machine Learning, Data Science