LUCY LIN

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EDUCATION

Master of Science in Robotics (MSR), Carnegie Mellon University 2025-Present
GPA: 4.0/4.0

Honor's Bachelor of Computer Science, Oregon State University 2019-2024
GPA: 4.0/4.0

Relevant Skills: Pytorch, NumPy, OpenCV, Python, C, C++
Relevant Courses: Robot Learning (graduate), Computer Vision (graduate), Deep Learning (graduate), Machine Learning and Data Mining Parallel Programming

RESEARCH EXPERIENCE

Vision-Language Models with Grounded and 3D-Aware Reasoning August 2025 - Present
Advisor: Dr. Katerina Fragkiadaki *Pittsburgh, PA*

- Developed Qwen-3D, a geometry-aware VLM that compresses multi-view RGB-D observations into persistent world-space tokens, applies 3D Rotary Positional Embeddings for scene-space attention, and grounds language via a query-based mask decoder
- Unified referential grounding, instance segmentation, and VQA across 2D and 3D; surpasses prior 3D LMMs on ScanRefer, ScanQA, SQA3D, and OOD Locate-3D while preserving strong 2D performance
- First-author paper accepted to ECCV 2026 (Project Page)

Point Cloud Segmentation with 2D-3D Models June 2024 - August 2025
Advisor: Dr. Fuxin Li *Corvallis, OR*

- Research in 3D perception on point clouds. Developed methods as to distill pretrained 2D model information into 3D segmentation models via joint 2D-3D model architectures directly segmenting on RGB-D sensor images.

Properties of Biharmonic Distance May 2023 - July 2024
Advisor: Dr. Amir Nayyeri *Corvallis, OR*

- Explored the theoretical properties of the biharmonic distance and its applications in graph clustering and learning. Conducted comparative experiments in graph clustering utilizing biharmonic and other spectral graph distances and constructed proofs on the biharmonic distance.
- Introduced a family of spectral distances as a generalization of the biharmonic distance
- Authored and presented full paper to ICML 2024.

Open-Set Detection on Radiofrequency Time Series March 2023 - June 2024
Advisor: Dr. Weng-Keen Wong *Corvallis, OR*

- Research in anomaly detection in multivariate time series. Simulated vector auto-regression models, re-learning such models through extensions of linear regression and detecting change in models using calculations of the LRT statistic.
- Implemented optimized eigenvalue estimation using Lanczos iteration for sparse matrices.
- Developed and implemented experiments comparing performance of various open-set detectors for multivariate time series
- Authored a paper to the ITU Journal on Future and Evolving Technologies.

Robotic Grasping and Manipulation Sep 2019 - Jan 2021
Advisor: Dr. Cindy Grimm *Corvallis, OR*

- Projects involving decision making for robotic grasping and manipulation. Calibrated and filtered spatio-temporal data from inertial measurement units with incorporation of transformation matrices to visualize data using Python and Matplotlib methods.
- Presented at the OSU Summer Undergraduate Research Symposium.

PUBLICATIONS

1. **Lin, L.***, Jain, A.*, Liu, Y., Fragkiadaki, K. "Qwen-3D: A Generalist 3D Vision-Language Model for Spatial Understanding". *ECCV 2026*. (Project Page)
2. Black, M., **Lin, L.**, Wong W-K. and Nayyeri, A. "Biharmonic Distance of Graphs and its Higher-Order Variants: Theoretical Properties with Applications to Centrality and Clustering". *ICML 2024*, Vienna, Austria
3. Puppo, L., Wong, W-K., Hamdaoui, B., Elmaghbub, A. and **Lin, L.**. "On the Extraction of RF Fingerprints from LSTM Hidden-State Values for Robust Open-Set Detection". *ITU Journal on Future and Evolving Technologies (ITU J-FET)*. 2024

AWARDS

- NSF Graduate Research Fellowship (2025-2030)
- CMU Bruce J. Nelson Graduate Fellowship (2025)
- OSU Waldo-Cummings Outstanding Student Award (2023)
- NSF Summer Research Experience for Undergraduates (NSF REU) (2020)
- Undergraduate Research Scholarship and the Arts Award (URSA) (2019-2020)
- OSU College of Engineering Dean's Scholarship (2019-2023)
- Finley Academic Excellence Scholarship (2019-2023)
- Wei Family Foundation Scholarship (2019-2023)

WORK EXPERIENCE

Research and Development Intern June 2023 - December 2023
HP Inc. *Corvallis, OR*

- Developed image analysis algorithms utilizing OpenCV computer vision methods to detect and score inputted PDFs for probability of certain printing risks occurring.
- Led project planning and investigation for optimization of analysis utilizing methods involving image classification and image segmentation convolutional neural networks and generation of labeled training data.
- Work presented at Drupa 2024 Exhibition for Printing Technologies

DevOps Engineer (MECOP) Mar 2022 - Feb 2023
Cambia Health Solutions *Portland, OR*

- Internal software product and cloud infrastructure development with Terraform, AWS, CircleCI, unit testing in Golang

PROJECTS

Million Dollar Printing Press Job Advisor Project in partnership with HP Inc. Investigated and implemented image analysis methods in Python OpenCV libraries to automate selection of printing settings for industrial printing jobs (Product Page)

ACTIVITIES

- Corvallis-OSU Symphony Orchestra (Assistant Concertmaster) (Sept 2019 - June 2024)
- OSU Chamber Music Group (Sept 2019 - June 2025)