Yingjie Lei

Foshan, China | ylei25@jh.edu | Google Scholar | Homepage | LinkedIn | GitHub

Education

Johns Hopkins University — *Starting Aug 2026*
M.S.E. in Computer Science (Incoming)

South China Normal University – Aberdeen Institute of Data Science & AI — *Sep 2022 – Jun 2026 (Expected)*
B.Eng. & B.Sc. (Hons) in Artificial Intelligence

- Dual-degree program in Artificial Intelligence
- CN Degree: B.Eng. in Artificial Intelligence, South China Normal University (Project 211)
- UK Degree: B.Sc. (Hons) in Artificial Intelligence, University of Aberdeen
- **GPA:** 90.9/100 (CN), 20.23/22 (UK); **Rank:** 5/88 (Top 5.7%)
- **Core Courses:** Machine Learning, Data Mining and Visualization, Robot Technology, Languages and Computability, Discrete Mathematics, Probability and Mathematical Statistics

Research Interests

Computer vision, generative modeling, and world models for embodied planning and robot learning.

Publications & Preprints

PrefBench: Evaluating Zero-Shot LLM Agents in Hidden-Preference Personalized Pricing Negotiations — May 2026
Yingjie Lei
arXiv preprint, arXiv:2605.22855, 2026.

Draft-and-Target Sampling for Video Generation Policy — Under Review
Qikang Zhang, ***Yingjie Lei***, Wei Liu, Daochang Liu
Under review, 2026.

Test Time Training for 4D Medical Image Interpolation — Apr. 2025
Qikang Zhang*, ***Yingjie Lei****, Zihao Zheng, Ziyang Chen, Zhonghao Xie
IJCNN 2025, Oral Presentation.

Research Experience

Undergraduate Thesis: Personalized Pricing of Customized Car Features — *SCNU / Aberdeen*
Supervised by Dr. Binod Bhattarai; Thesis grade: 92/100; Outstanding Thesis (Top 10%) — *Jan. 2026 – Apr. 2026*

- Formulated hidden-preference personalized pricing as a **POMDP** with latent buyer traits, multi-round negotiation, and profit-oriented sequential decision making.
- Built a reproducible simulator benchmark with public-data-grounded persona generation, explicit observable/hidden trait separation, fixed evaluation splits, and shared episode-level metrics.
- Implemented heuristic and learning-based seller agents, including **PPO** and **DreamerV3**, and ran ablations on reward design, semantic features, and inference-time adaptation.
- Refined the thesis into **PrefBench**, a preprint for evaluating LLM agents under hidden buyer preferences.

Draft-and-Target Sampling for Video Generation Policy — *SCNU*
Second Author, manuscript under review — *Apr. 2025 – Sep. 2025*

- Proposed **Draft-and-Target Sampling (DTS)**, a training-free acceleration framework for diffusion-based video generation that uses dual denoising trajectories within a single model.
- Introduced **Token Chunking** and **Progressive Acceptance** to reduce redundant resampling while preserving output fidelity.

- Achieved up to **2.1× speed-up** on *Meta-World, iThor, Libero* with minimal accuracy drop, and surpassed baselines in accuracy on *iThor*.
- Studied the method in embodied-style video-policy settings, emphasizing inference efficiency for downstream decision-making rather than only generic video generation quality.
- **Personal Contributions:** Implemented and refined the core pipeline, ran ablations and benchmarks on *Meta-World* and *iThor*, organized results, created task visualizations, and contributed to manuscript writing and revision.

Test Time Training for 4D Medical Image Interpolation *SCNU*
Co-first Author, paper published in the Proceedings of IJCNN 2025 (Oral) *Sep. 2024 – Feb. 2025*

- Proposed a **Test Time Training (TTT)** framework for 4D medical image interpolation to handle distribution shift without requiring target-domain labels.
- Designed a shared-encoder adaptation mechanism using self-supervised tasks, including *rotation prediction* and *3D-MAE reconstruction*, during inference.
- Achieved state-of-the-art results on **Cardiac MRI** and **4D-Lung CT** (**33.7dB** and **34.0dB PSNR**) with improved robustness under distribution shift.
- Framed the method as a reusable adaptation template for downstream medical vision tasks such as segmentation and registration under shifting test distributions.
- **Personal Contributions:** Implemented the core 3D-MAE module, ran experiments and metric evaluation, created visualizations, improved code clarity, and contributed to manuscript writing and revision.

Selected Course Projects

LLM-Based Intelligent Schedule Assistant (*Score: 99/100*, UK Grading) *Feb 2025 – Jun 2025*

- Led a 6-person team to build an LLM-powered scheduling assistant; designed the system architecture, implemented the Python backend, and integrated the DeepSeek and Google Maps APIs, resulting in the highest course score of 99/100.

Self-Supervised Learning with SimCLR and MAE (*Score: 90/100, UK Grading*) *Feb 2025 – Apr 2025*

- Implemented and compared **SimCLR** and **MAE** with a ViT backbone on Imagenette; **MAE** achieved **89.6%** Top-1 accuracy with stronger F1 and better efficiency, resulting in a project score of 90/100.

Honors & Awards

SCNU Comprehensive Scholarship (3rd Prize) Apr 2026
Merit-based award recognizing strong academic record and overall performance

SCNU Outstanding Student Scholarship Mar 2025
Awarded to top students with excellent academic performance (Top 8% in cohort)

SCNU-UoA Joint Institute Scholarship (3rd Prize) Oct 2024
Granted for outstanding GPA performance, ranked 5th out of 86 students

SCNU Comprehensive Scholarship (3rd Prize) Mar 2024
Merit-based award recognizing strong academic record and overall performance

Skills & Qualifications

- **Tests:** IELTS Academic 7.5 (L 8.5, R 8.5, W 6.5, S 7.0); GRE 319 (Q 170, V 149, AW 3.5)
- **Programming:** Python (Proficient, Research/Project Experience), Java (Academic Coursework).
- **ML/DL:** PyTorch (Solid Research Experience), HuggingFace, Diffusion Models, Transformers, CNNs, Reinforcement Learning, Test Time Training, Classic ML Algorithms (e.g., Regression, Clustering).
- **Data Science/Tools:** Jupyter Notebook, NumPy, pandas, Scikit-learn, Matplotlib, Seaborn, Data Preprocessing, Exploratory Data Analysis (EDA), Clustering, Data Visualization.
- **Productivity/Documentation:** LaTeX (Academic Writing/Reports), Git (Version Control), Zotero (Research Data and Citation Management), Microsoft 365.
- **Languages:** Mandarin (Native), Cantonese (Native), English (Fluent)