Jui-Chao Lu

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Education

National Taiwan University (NTU) Sep. 2020 - Jun. 2025
*B.S.E Electrical Engineering, Minor in **Computer Science*** *Last 60 GPA: 3.6/4.0; CS related GPA: 3.6/4.0*
Selected Courses: (All A) Machine Learning, Reinforcement Learning, Deep Learning in Computer Vision, Probability & Statistics, Foundations of AI, Advanced Deep Learning **[2]**, Linear Algebra

Publications

[1] Po-Yi Lu*, **Jui-Chao Lu***, ... and Hsuan-Tien Lin **"Contrastive Gradient Guidance for Test-time Preference Alignment of Diffusion Models"**. *Under review at **ICLR 2026**.*

[2] Yu-Ang Lee, ..., **Jui-Chao Lu**, ... and Yun-Nung Chen **"Compound AI Systems Optimization: A Survey of Methods, Challenges, and Future Directions."** *Published at **EMNLP 2025**.*

Research Experience

NTU Computational Learning Lab | *Advisor: Prof. Hsuan-Tien Lin* Nov. 2024 – Present
- Developed a **test-time preference alignment** method that avoided the required heavy computational effort of latent decoding by proposing **diffusion model** in log ratio **contrastive form** as implicit reward. **[1]**
- Pioneered in **collaborative preference** to investigate its importance in **user-aware preference alignment**.

Institute of Information Science, Academia Sinica | *Advisor: Prof. Jen-Jun Lin* Nov. 2024 – Jun. 2025
- Investigated potential improvements of **text-to-motion generation** via discovering the long-term error introduced by the widely adopted autoregressive generation architecture.
- Enhanced long prompt performance by designing **CLIP** fine-tune techniques and developed LLM rephrasing methods.

NTU Speech Lab | *Advisor: Prof. Hung-Yi Lee* Jan. 2023 – Jun. 2024
- Conducted extensive research in **LLM** and **speech processing** by enhancing SSL downstream tasks.
- Leveraged **CoT** and **prompt engineering** techniques to enhance automated prompt optimization performance.

Professional Service - Conference Reviewer: IEEE TASLP, ACL ARR (July 2025)

Work Experience

UC Capital - AI Quantitative Research Intern Jul. 2025 – Aug. 2025
- Designed quantitative heuristics based on factors and combined with TWAP strategies to surpass model-free baselines.
- Adopted 50+ factors and introduced models such as **XGBoost**, Transformers to execute **high frequency trading.**

NTUEE Introduction of Generative AI - Teaching Assistant Jan. 2024 – Jun. 2024
- Designed 2 assignments on **GenAI applications**, and implemented an **AI assignment grading** system pipeline.
- Gave assignment guidance and academic consulting to a 3000+ student class.

TrendMicro - RD Intern Jul. 2023 – Aug. 2023
- Integrated automation testing pipeline by utilizing **GitHub Actions** and deployed **Blackduck** to secure repositories.
- Implemented various edge test cases using Selenium to ensure the product webpage stability.

Selected Projects

I-COS: Inpainting to Compensate Occluded Skeleton | *Segmentation, Pose Estimation* Nov. 2024 - Dec. 2024
- Integrated **SAM2**, **BrushNet**, **ViTPose** as an effective pipeline for occluded person pose estimation
- Enhanced mAP from **32.6 to 38.0** compared with no inpainting baselines

Meta-RL on Stock Investment | *RL, Meta Learning* Nov. 2023 - Dec. 2023
- Adopted **meta reinforcement learning** to quickly adapt to unseen stock or IPO.
- Aimed to maximize return with fixed asset on different stocks.

Pupil Tracking | *CV, image processing, ML* Apr. 2023 - Jun. 2023
- Achieved accuracy of **94+%** by **DeeplabV3** segmentation model.
- Integrated traditional CV concepts and OpenCV libraries on image postprocessing.

Skills

Frameworks/Tools: PyTorch, TensorFlow, Git/GitHub, Unix Shell, Unity, React, **Huggingface**, **Diffusers**
Language: TOEFL iBT 107(R:30 L:29 S:21 W:27), TOEIC 970