

LAWRENCE (YIYANG) LUO

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Education

Nanyang Technological University(NTU)

M.Sc. of Artificial Intelligence (4.65/5.00)

Jan. 2023 – Jul. 2024

Singapore, Singapore

The Chinese University of Hong Kong(CUHK)

B.Sc. of Computer Science(3.46/4.00), Second Upper Class Division

Aug. 2018 – Jul. 2022

Hong Kong, China

Publications

* denotes equal contribution.

- Luo, Y.* , Lin, K.* & Chao, G.(2024). Context-Aware Indoor Point Cloud Object Generation through User Instructions. In *ACM Multimedia 2024*.
- Lin, K., Luo, Y., Zhang, Z., & Ping, L. (2024, June). Zero-shot Generative Linguistic Steganography. In *Proceedings of the 2024 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (Volume 1: Long Papers)* (pp. 5168-5182).
- Xu S., Luo, Y. & Shi W. (2024). Geo-LLaVA: A Large Multi-Modal Model for Solving Geometry Math Problems with Meta In-Context Learning. In *Proceedings of the 2nd Workshop on Large Generative Models Meet Multimodal Applications*.
- Zhou, J., Leong, C., Luo, Y., Lin, M., Liao, W., & Li, C. (2021, October). Unified Feature Fusion Network with Path Router for Multi-task Image Restoration. In *2021 IEEE 21st International Conference on Communication Technology(ICCT)*(pp. 1206-1210). IEEE.
- Luo, Y.* , Lin, K.* & Chao, G.*(2024). Lost in Overlap: Exploring Watermark Collision in LLMs. arXiv preprint arXiv:2403.10020.

Career

Huawei Singapore Research Center - Search and Recommendation Lab

AI Research Engineer

May 2024 – Now

Singapore, Singapore

- Research on enhancing multimodal language model performance by optimizing input prompts for better alignment with best practices using reinforcement learning and large language model fine-tuning.
- Undertook research on text-to-image generation prompting strategies, including design of multi-agent system and construct reinforcement learning system.

Internships

Huawei Hong Kong Research Center - AI Framework & Data Tech Lab

Research Intern

May 2023 – Aug. 2023

Hong Kong, China

- Undertook comprehensive research on various distributed frameworks, including Dask, Torch, and Mindspore, to assess their parallel distribution system designs.
- Developed and executed tensor native graph algorithms on distributed systems, leveraging parallel computing techniques. This implementation significantly enhanced algorithm performance, achieving a speed comparable to Nvidia's Rapids' Cugraph package, with only a minimal 5% reduction.

SmartMore - Tool-chains Group

Computer Vision Algorithm Engineer Intern

Jun. 2022 – Dec. 2022

Shenzhen, China

- Analyzed industrial image data and preprocessed datasets based on defects with multiple data augmentation methods to enlarge the dataset and add variance to data, therefore enhancing the model's robustness and prediction accuracy.
- Improved SmartMore's SMAP codebase, a full-functional modularized AI training codebase, by adding new features such as label area filter, multi-channels image augmentation, and auto machine learning (hyper-parameter search).

Research Experience

Point-cloud-based Scene Augmentation, Master Research Project

Supervised by Guosheng Lin (Assoc. Professor, NTU)

Jan. 2023 – Nov. 2023

Singapore, Singapore

- Developed a novel multi-modal deep neural network for 3D scene augmentation based on text instructions. Applied diffusion model and cross-attention mechanism to generate realistic and consistent objects in the desired locations.
- Designed a data pipeline to transform existing visual grounding dataset into generative instructions. Employed prompt engineering and large language models (GPT-3.5 and GPT-4) to paraphrase descriptive texts into generative texts. Applied rule-based filtering and manual correction to ensure the quality of the transformed dataset.

Multi-task Image Restoration

Supervised by Congdian Li (Assoc. Professor, Sun Yat-sen University)

Jun. 2021 – Aug. 2021

Guangzhou, China

- Applied data augmentation methods to enlarge the training dataset. Programed the AI agents based on Multi-task Learning with Multi-gate Mixture-of-Experts (MMoE) in Pytorch.