

# YIYANG LUO (LAWRENCE)

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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). Lost in Overlap: Exploring Watermark Collision in LLMs. In *Findings of NAACL 2025*.
- 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 NAACL 2024*.
- 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.

## Career

### Huawei Singapore Research Center - Search and Recommendation Lab

May 2024 – Now

*AI Research Engineer*

*Singapore, Singapore*

- Researched to enhance multimodal models for solving geometric math problems by employing techniques such as meta-learning with Chain-of-Thought (CoT) and Low-Rank Adaptation (LoRA), in-context learning with Retrieval-Augmented Generation (RAG), and utilizing a novel dataset sourced from Chinese high school educational websites. Published and presented findings at the LGM3A workshop of ACMMM24.
- Collaborated on optimizing text-to-image generation strategies to improve output quality, align with user preferences, and reduce the risk of generating inappropriate content. Implemented techniques like Reinforcement Learning from Human Feedback (RLHF) and Retrieval-Augmented Generation (RAG). Successfully tested internally at Huawei, resulting in plans for deployment on HarmonyOS as a core AI feature in the coming year.

## Internships

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

May 2023 – Aug. 2023

*Research Intern*

*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

Jun. 2022 – Dec. 2022

*Computer Vision Algorithm Engineer Intern*

*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

Jan. 2023 – Nov. 2023

*Supervised by Guosheng Lin (Assoc. Professor, NTU)*

*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

Jun. 2021 – Aug. 2021

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

*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.