Yiyang Luo, Lawrence

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Education

Nanyang Technological University(NTU) **Jan. 2023 – May 2024**
M.Sc. of Artificial Intelligence (4.63/5.00) *Singapore, Singapore*

The Chinese University of Hong Kong(CUHK) **Aug. 2018 – Jul. 2022**
B.Sc. of Computer Science(3.46/4.00), Second Upper Class Division *Hong Kong, China*

Publications

* **Luo, Y.***, Lin, K.* & Chao, G.(2024). Lost in Overlap: Exploring Watermark Collision in LLMs. Under review at the 62nd Annual Meeting of the Association for Computational Linguistics (ACL 2024).
* **Luo, Y.*** & Lin, K.* (2023). PISA: Point-cloud-based Instructed Scene Augmentation. *arXiv preprint [Cs.CV] arXiv: arXiv.2311.16501.*
* Lin, K., **Luo, Y.**, Zhang, Z., & Luo, P.(2023). Zero-Shot Generative Linguistic Steganography. Accept by 2024 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL 2024).
* 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.

Internships

Huawei Hong Kong Research Center **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.
- Enhanced system computational capabilities and expanded hardware support by integrating multiple hardware components, such as GPUs and NPUs. This integration played a crucial role in optimizing system performance.

SmartMore **Jun. 2022 – Dec. 2022**
Computer Vision Algorithm Engineer *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).
- Applied an auto machine learning algorithm to search the optimal hyper-parameter settings for defect segmentation tasks on Airpods spiale, and designed SDK for further algorithm development and project management.

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.

Properties of Long-tailed Recognition Problem **Sep. 2021 – May 2022**
Supervised by Jiaya Jia (Professor, CUHK) & Bei Yu (Assoc. Professor, CUHK) *Hong Kong, China*

- Researched and gained insights into methods on long-tailed recognition problems; reproduced and analyzed the experiment results of different approaches to compare their features and find their relationship using Pytorch.
- Found and verified that the influence of batch size setting could be different on different classifier retraining methods, conducted further research on different methods' influences on model's prediction variance.

Multi-task Image Restoration **Jun. 2021 – Aug. 2021**
Supervised by Congduan 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.
- Evaluated model performance, adjusted models, and collected and analyzed experiment data for paper writing.

Skills

Languages: Python, Java, C, JavaScript, SQL, Rust
Developer Tools: Latex, Git, PyTorch, Docker, Hadoop, CUDA
Languages: Mandarin(native), English(IELTS 7.5)