Rundong Luo

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Education

Peking University Beijing, China
Bachelor of Science in Computer Science and Technology (Turing Class) Degree anticipated in Jun 2024

- **GPA: 3.856**/4.0, **Ranking: 5**/282, top **2%** among CS/AI major students.
- **Core Courses:** Advanced Algebra I/II (99/93.5), Discrete Mathematics and Structures (99), Computer Vision (93.9), Computational Photography (100), Multimodal Learning (95), Operating System (96).
- **Standard Tests**: TOEFL: 113 (Speaking 26), GRE: 328+4.
- **Selected Honors and Awards:**
  - Chinese National Scholarship (top 0.2%), 2023
  - China Optic Valley Scholarship, 2022
  - Peking University Freshman Scholarship, 2020
  - First Prize for National Mathematics Olympiad (Provincial), 2018/2019
  - Merit Student (Pacemaker), 2022/2023
  - Award for Community or Public Service, 2021
  - National College Entrance Exam: Ranking 4/50000+, 2020

Publications and Manuscripts

* indicates equal contributions

- **Rundong Luo***, Hong-Xing Yu*, and Jiajun Wu. Unsupervised Discovery of Object-Centric Neural Fields. Under Review, 2023.
- Wenjing Wang*, **Rundong Luo***, Wenhan Yang, and Jiaying Liu. Unsupervised Illumination Adaptation for Low-Light Vision. Minor Revision, IEEE TPAMI, 2023.
- **Rundong Luo**, Wenjing Wang, Wenhan Yang, and Jiaying Liu. Similarity Min-Max: Zero-shot Day-Night Domain Adaptation. In ICCV, 2023. Project Page, Code.
- **Rundong Luo***, Yifei Wang*, and Yisen Wang. Rethinking the Effect of Data Augmentation in Adversarial Contrastive Learning. In ICLR, 2023. Paper, Code.

Research Experience

Unsupervised Single-Image 3D Object Discovery Jan. 2023 - Present
Advisor: Prof. Jiajun Wu Stanford University
Sponsored by the UGVR program (20 undergraduates per year national-wide) and serve as the team leader.

- Explored unsupervised single-image 3D object discovery, *i.e.*, from a single image, infer the objects' 3D representations within the underlying scene. These representations can be further used to reconstruct or manipulate the scene from arbitrary views.
- Designed a framework that jointly predicts objects' position and representation, allowing placing objects in its object-centric frame. Our approach is the first that enables unsupervised discovery of visually-rich objects from a single real image, allowing applications such as 3D object segmentation and 3D scene manipulation. This work resulted in a top-tier conference submission.

Nighttime High-Level Vision with Low-Level Insights Apr. 2022 - Present
Advisor: Prof. Jiaying Liu Peking University

- Explored low-level vision for high-level applications. Specifically, we draw insights from low-level vision to improve models' performance in nighttime/low-light high-level tasks.
- Proposed a zero-shot day-night domain adaptation algorithm that leverages curve-based adjustment (a low-level technique) and contrastive learning to improve pre-trained models' performance in nighttime scenarios. This work resulted in a paper accepted at ICCV 2023 and further chosen for an oral presentation (152/8260).
- Proposed a deep concave curve algorithm for low-light enhancement, which not only restores low-light images to normal-light but also significantly improves downstream models' performance on these images compared with traditional low-light enhancement algorithms. This work resulted in a top-tier journal submission.

Self-Supervised Learning and Adversarial Machine Learning Jul. 2021 - Sept. 2022
Advisor: Prof. Yisen Wang Peking University

- Studied self-supervised adversarial learning, which aims to improve the model's adversarial robustness under the self-supervised learning paradigm.
- Conducted empirical and theoretical analysis on the effect of data augmentation on self-supervised adversarial learning and proposed a dynamic data augmentation schedule based on the analysis. Our algorithm achieves state-of-the-art results across multiple datasets and evaluation protocols. This work resulted in a paper accepted at ICLR 2023.

Patents

- Jiaying Liu, **Rundong Luo**, and Wenjing Wang. *An unsupervised low-light domain adaptive training method and detection method.* Patent pending, application No. CN202211129606.6

Academic Service

- Reviewer: CVPR 2024, IEEE TIP, IEEE TCSVT.
- Teaching Assistant: Practice of Programming in C&C++ (PKU, Spring 2023).