

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 (cumulative): 3.856/4.0, Ranking: 5/144, top 4%** among CS major and **5/282, top 2%** among CS/AI major.
- **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
 - Merit Student (Pacemaker), PKU, 2022/2023
 - Academic Innovation Award, PKU, 2023
 - China Optic Valley Scholarship, 2022
 - Award for Community or Public Service, PKU, 2021
 - Peking University Freshman Scholarship, 2020
 - National College Entrance Examination (aka "Gaokao", Shanghai Provincial): Ranking 4/50000+, 2020
 - Chinese Mathematics Olympiad (Shanghai Provincial), First Prize, 2018/2019

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.
- **Rundong Luo***, Yifei Wang*, and Yisen Wang. Rethinking the Effect of Data Augmentation in Adversarial Contrastive Learning. In ICLR, 2023.

RESEARCH EXPERIENCE

Object-centric 3D Scene Representation Learning

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 to enable 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.

Low-level Vision for High-level Tasks in Adverse Environment

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 (top 2%).
- Proposed a deep concave curve algorithm for low-light enhancement, which restores low-light images to normal-light and 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 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, TIP, TCSVT.
- Teaching Assistant: Practice of Programming in C&C++ (PKU, Spring 2023).