Zujin Guo

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Education

Nanyang Technological University, MMLab@NTU Aug 2021 – Jan 2023
Master of Science in Artificial Intelligence; GPA: 4.4/5.0

Xi'an Jiaotong University Sept 2016 – June 2020
Bachelor of Engineering in Automation; GPA: 83.81/100

Employment History

Research Engineer, MMLab@NTU – Singapore Mar 2023 – Present
- Conducted independent research in computer vision, exploring topics such as diffusion models, 3D human modeling, and optical flow.
- Proposed a control-guided video diffusion framework for human-centric keyframe interpolation/generation.
- Proposed a generalizable implicit motion modeling method for the video frame interpolation task.

Research Intern, MEGVII – Beijing, China Mar 2021 – June 2021
- Investigated pre-text tasks in video self-supervised learning for action recognition.

Algorithm Engineer Intern, Apon Medical – Shanghai, China Feb 2020 – Jan 2021
- Worked on several medical projects, including medical instrument monitoring, apnea detection, and facial-expression classification.

Projects

Controllable Human-centric Keyframe Interpolation | MMLab@NTU Aug 2024 - May 2025
Advised by Dr. Wei Li, Prof. Chen Change Loy.
- Explored 3D controls for generating/interpolating plausible human keyframes over long temporal intervals.
- Developed an innovative diffusion-based framework enabling controllable human interpolation in challenging motion scenarios.
- Constructed a high-quality dataset featuring rich and precise human-centric annotations.
- Conducted comprehensive experimental comparisons and ablation studies to validate model effectiveness and demonstrate state-of-the-art performance.
- The project has been formulated as a research paper and is available on arXiv.

Video Frame Interpolation | MMLab@NTU Apr 2023 - Feb 2024
Advised by Dr. Wei Li, Prof. Chen Change Loy.
- Investigated and identified the challenges of the video frame interpolation task.
- Proposed an effective motion modeling paradigm for video frame interpolation, characterized by a novel Generalizable Implicit Motion Modeling (GIMM) framework.
- Conducted experiments and ablation studies for the proposed method in motion modeling and in interpolation.
- This work is accepted by NeurIPS 2024.

Related Anything | MMLab@NTU Apr 2023 - Apr 2023
Collaborated with Bo Li, Jingkang Yang and Zijian Zhou.
- Built the first Relate Anything Model (RAM) demo which predict the relations of any segmented object pairs, in the light of the Segment Anything Model.

Panoptic Scene Graph | MMLab@NTU Nov 2021 - Mar 2022
Collaborated with Jingkang Yang and Yizhe Ang.
- Proposed the Panoptic Scene Graph (PSG) Generation Task for scene understanding.
- Established new datasets, benchmarks, baselines and a codebase for the task.
- This work is accepted by ECCV 2022.

Pre-text tasks for Video self-supervised learning | MEGVII Mar 2021 - June 2021
Advised by Dr. Pengkun Zheng.

- Investigated self-supervised learning frameworks, *e.g.*, MoCo, SimCLR, BYOL.
- Explored potential supervisions and pre-text tasks for effective representation learning.
- Proposed video acceleration prediction as a pre-text task for self-supervised learning.

Publications

1. **Zujin Guo**, Size Wu, Zhongang Cai, Wei Li, Chen Change Loy. Controllable Human-centric Keyframe Interpolation with Generative Prior. On arXiv, 2025.

2. **Zujin Guo**, Wei Li, Chen Change Loy. Generalizable Implicit Motion Modeling for Video Frame Interpolation. In *Advances in Neural Information Processing Systems* (NeurIPS), 2024.

3. Jingkang Yang, Yi Zhe Ang, **Zujin Guo**, Kaiyang Zhou, Wayne Zhang and Ziwei Liu. Panoptic Scene Graph Generation. In *European Conference on Computer Vision* (ECCV), 2022.

4. Jingkang Yang, Wenxuan Peng, Xiangtai Li, **Zujin Guo**, Liangyu Chen, Bo Li, Zheng Ma, Wayne Zhang, Kaiyang Zhou, Chen Change Loy, Ziwei Liu. Panoptic Video Scene Graph Generation. In *Computer Vision and Pattern Recognition* (CVPR), 2023.

5. Jinghao Wang, Zhengyu Wen, Xiangtai Li, **Zujin Guo**, Jingkang Yang, Ziwei Liu. Pair then Relation: Pair-Net for Panoptic Scene Graph Generation. In *IEEE Transactions on Pattern Analysis and Machine Intelligence* (TPAMI), 2024.

Patents

1. Ting Zhou, **Zujin Guo**, Hongyang Ruan. Breast cancer postoperative intelligent rehabilitation training method, device, equipment and storage medium. CN Patent 112,820,382 A, 2021.

2. Ting Zhou, Qiang Han, Qing Li, **Zujin Guo**. Black eye and rhinitis identification method, system and computer medium. CN Patent 112,541,394 A, 2021.

3. Ting Zhou, Qing Li, Hongyang Ruan, **Zujin Guo**. Method and device for monitoring sleep apnea. CN Patent 111,938,650 B, 2020.

Academic Service & Skills

Conference/Journal Reviewer: CVPR, ICCV, ECCV, NeurIPS, AAAI, ICLR, AISTATS, ICML, IJCV.
Programming: Python, HTML, Java, MATLAB, C
Language: Mandarin Chinese (Native), English (Fluent, IELTS 7/6.5), French (Conversational)