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EDUCATION

B.S. Student. Beijing Jiaotong University, China

2022.9 – Now

Computer Science and Technology

Advisor: Prof. Yunchao Wei and Xiaojie Jin

Research interests in 3D Vision and Video Generation.

RESEARCH EXPERIENCE

Stereoscopic Video Generation

2025.08 – 2025.11

The rising demand for high-quality stereo video in XR applications contrasts with the high cost and frequent artifacts of current production methods. To address this gap, we propose StereoWorld, an end-to-end framework that converts monocular videos into high-fidelity stereo pairs. Our method repurposes a pretrained video generator with geometry-aware regularization to ensure 3D structural accuracy, and uses a spatio-temporal tiling scheme for efficient high-resolution synthesis. We also build a large stereo video dataset with over 11M IPD-aligned frames.

4D Panoramic Scene Generation and Reconstruction

2024.02 – 2025.07

The rapid advancement and widespread adoption of VR/AR technologies have driven a growing demand for high-quality, immersive dynamic scenes. To meet this need, we introduce a novel dual-branch architecture for panoramic video generation, which we then lift into the 4D domain via spatial-temporal alignment reconstruction. Our architecture comprises a perspective branch that controls local content generation and ensures diversity, and a panorama branch that manages global content generation and maintains consistency. The spatial-temporal alignment reconstruction step specifically aims to convert the panoramic video into a 4D field while preserving both spatial and temporal coherence.

Protein Sequence Classification

2023.04 – 2024.04

Inspired by the remarkable sequence processing capabilities of pre-trained NLP models like BERT, we investigated applying BERT, pre-trained on large-scale protein sequence datasets and fine-tuned on domain-specific data, to address protein sequence classification within specific domains.

Video Distortion Correction

2024.05 – 2025.04

Wide-angle lenses capture a wide field of view but introduce significant distortion. To correct distorted video, we first train an image-based distortion-correction model using a diffusion model to predict accurate optical flow. We then transfer this knowledge to a video-correction model through pseudo-labeling and temporal optical-flow consistency, addressing the scarcity of labeled distorted-video data.

PUBLICATIONS

- **Ke Xing***, Hanwen Liang*, Dejia Xu, Yuyang Yin, Konstantinos N. Plataniotis, Yao Zhao, Yunchao Wei. “TiP4GEN: Text to Immersive Panorama 4D Scene Generation.” **ACM Multimedia, 2025, CCF-A**.
- **Ke Xing**, Longfei Li, Yuyang Yin, Hanwen Liang et al. “StereoWorld: Geometry-Aware Monocular-to-Stereo Video Generation” **CVPR, 2026, CCF-A, Submission**.
- Ana Martínez Gascueña, Haiyang Wu, Rui Wang, C David Owen, Pedro J Hernando, Serena Monaco, Matthew Penner, **Ke Xing** et al. “Exploring the sequence-function space of microbial fucosidases.” **Nature Communications Chemistry, 2024**.
- Wenbo Nie, Lang Nie, Chunyu Lin, Jingwen Chen, **Ke Xing**, Jiyuan Wang et al. “Beyond Wide-Angle Images: Structure-to-Detail Video Portrait Correction via Unsupervised Spatiotemporal Adaptation.” **AAAI, 2026, CCF-A**.