Zhenwei (Zavier) Wang

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Education

City University of Hong Kong (CityU) Supervisor: Rynson W.H. Lau 2021 – now
Ph.D. in Computer Science, expected July 2025

Xiamen University (XMU), Xiamen, China 2016 – 2020
B.S. in Software Engineering, XMU's Special Plan of Excellent Engineer

Work Experience

Shanghai Artificial Intelligence Laboratory Supervisor: Tengfei Wang and Ziwei Liu 2023 – now
3D AIGC Resarch Intern

Shenzhen Institute of Advanced Technology (SIAT) Supervisor: Min Yang 2020 – 2021
NLP Research Intern

Teaching Experience

Virtual Reality Technologies and Applications (CS4188/CS5188) CityU Spring 2022, Spring 2023
VR Project Tutor: VR devices introduction and Unreal Engine programming

Information Security for eCommerce(CS5285) CityU Fall 2022, Fall 2023

Publications (*: Joint 1st author)

- **Zhenwei Wang**, Tengfei Wang, Zexin He, Gerhard Hancke, Ziwei Liu, Rynson W.H. Lau. "Weaving Geometry Guidance into Multi-View Diffusion for Reference-Augmented 3D Generation", *To be submitted*
- **Zhenwei Wang**, Tengfei Wang, Gerhard Hancke, Ziwei Liu Rynson W.H. Lau. "ThemeStation: Generating Theme-Aware 3D Assets from Few Exemplars", *Proc. SIGGRAPH 2024*
- Yuhao Liu, Zhanghan ke, Ke Xu, Fang Liu, **Zhenwei Wang**, Rynson W.H. Lau. "Recasting Regional Lighting for Shadow Removal", *AAAI 2024*
- **Zhenwei Wang***, Nanxuan Zhao*, Gerhard Hancke, and Rynson Lau. "Language-based Photo Color Adjustment for Graphic Designs", *ACM Trans. on Graphics, Proc. SIGGRAPH 2023*
- Min Yang*, **Zhenwei Wang***, Q. Xu, C. Li, R. Xu. Leveraging Hierarchical Semantic Emotional Memory in Emotional Conversation Generation. *CAAI Trans. on Intelligence Technology, 2022 (JCR Q1)*

Research Projects

Reference-Augmented MV Diffusion for 3D Generation *Shanghai AI Lab* Mar. 2024 – now

- Existing multi-view diffusion models suffer from 3D inconsistency and ambiguity. We design a novel approach to weave the geometry guidance of a retrieved/user-specified 3D mesh into multi-view diffusion for consistent and structured multi-view generation from a single image. We also train a customized Large Gaussian Reconstruction Model for sparse-view 3D reconstruction from the synthesized multi-view images.

Single Image to 3D Generation with PBR Materials *CityU* Feb. 2024 – now

- PBR materials are usually ignored by existing image-to-3D methods. We aim to propose a synthesized 3D dataset with rich materials and a multi-view multi-domain diffusion model to predict consistent normal/albedo/material maps from a single image for generating 3D objects with high-quality PBR materials.

Theme-Aware 3D to 3D Generation *Shanghai AI Lab* Sep. 2023 – Jan. 2024

- VR or video games often require a large gallery of 3D assets that shares a consistent theme. To automate this labor-intensive process, we present ThemeStation, a novel approach for crafting theme-consistent 3D models. We make a first attempt to extend 2D diffusion priors for 3D-to-3D generation. From one or few exemplars to a universe of 3D assets, our two-stage framework and dual score distillation process ensure a good blend of unity and diversity.
  - Project page: https://3dthemestation.github.io/

Language-based Photo Recoloring System for Graphic Designs CityU Dec. 2021 – Mar. 2023

- Existing image color editing methods face a dilemma between ease of use and level of controllability. We design a novel system for recoloring photos in graphic designs via semantic palette, following input instructions. We also propose a synthesized dataset that follows real-world design knowledge, to enable model training.
  - Project page: https://zhenwwang.github.io/langrecol/

Emotional Conversation Generation *SIAT* Aug. 2020 – Jun. 2021

- Existing conversational models are of low informativeness and are incoherent with the input. We design a hierarchical semantic-emotional memory module that learns abstract conversational patterns and emotional knowledge from the large training corpus and helps generating semantically coherent and emotionally reasonable responses.
  - Code and data: https://github.com/siat-nlp/HSEMEC-code-data

Awards

Research Tuition Scholarship, City University of Hong Kong	2023
Outstanding Academic Performance Award, City University of Hong Kong	2023
Outstanding Graduate, Xiamen University	2020
Outstanding Student, Xiamen University	2019,2020
Huang Xilie Scholarship, Xiamen University (Ranking 1/127)	2019, 2020
First-Class Scholarship (Top 3%), Xiamen University	2018

Skills and Services

Distributed training of large 2D/3D generative models on large-scale computing clusters (e.g., 4x8 A100 GPUs)
Large-scale 3D dataset (e.g., Objaverse) process and rendering
Reviewer: SIGGRAPH, ACM TOG, IEEE TVCG