Haoyu Wu

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EDUCATION

Renmin University of China   **Beijing, China**
Bachelor of Spanish, Minor in Computer Science   *09 2021 - 06 2025*

The Hong Kong University of Science and Technology   **Hong Kong, China**
Research Intern at CSE. Supervisor: Prof. Qifeng CHEN   *07 2024 - 01 2025*

Courses with distinctions: Introduction to Computer System I(95),Advanced Algebra II(90), Calculus(90)
Teacher Assistant: Introduction to Computer System I(ICS I)
Technical Skills: Python; C/C++; Torch; Pytorch Lightning; DeepSpeed; Git

INTERNSHIPS

- **MSRA, ML Group, Advisor: Dr.Junliang Guo and Tianyu He** Research About Interactive Video Generation and World Modeling.

RESEARCH INTERESTS

My research focuses on developing video generation models that serve as interactive, real-time, and 3D-consistent world simulators.

PUBLICATION & UNDER REVIEW

Geometry Forcing: Marrying Video Diffusion and 3D Representation   **preprint**
for Consistent World Modeling
Haoyu Wu*, Diankun Wu*, Tianyu He et.al   *ML Group, MSRA*

- To bridge the gap between video diffusion models and the physical world, we propose Geometry Forcing, a simple yet effective method that encourages video diffusion models to internalize latent 3D representations.

EmoTalk: Speech-Driven Emotional Disentanglement for 3D Face Animation   **ICCV23**
Ziqiao Peng, Haoyu Wu, et.al   *DBIIR Lab, RUC*

- Followed the latest research on talking head generation, designed a content and emotion disentanglement module, and reproduced state-of-the-art models for comparative experiments.

VideoDPO: Omni-Preference Alignment for Video Diffusion Generation   **CVPR25**
Runtao Liu*, Haoyu Wu*, et.al   *CSE, HKUST*

- We propose an automatic pipeline on preference video data collection. Then finetuned 3 open-source text2video models to validate our effectiveness.

DualTalk: Dual-Speaker Interaction for 3D Talking Head Conversations   **CVPR25**
Ziqiao Peng, Yanbo Fan, Haoyu Wu, et.al   *DBIIR Lab, RUC*

VGG-Tex: Vivid Geometry-Guided 3D Facial Texture Estimation and Reconstruction   **Under review**
Haoyu Wu, Ziqiao Peng, et.al   *DBIIR Lab,RUC*

RESEARCH EXPERIENCE

Diffusion-based Storytelling   **GSAI, Renmin University of China**
Led by Prof. Bing Su and Prof. Chongxuan Li   *03 2023 - 03 2024*

- Led the development of a text-driven sequence diffusion model for story visualization incorporating sequence information and character enhancement.

Video Generation   **CSE, HKUST**
Led by Prof. Qifeng Chen   *03 2024 - 01 2025*

- **VideoDPO**: Omni-Preference Alignment for Video Diffusion Generation.(CVPR25)   [Github,Project Page ,Paper]
- **VideoTuna**:A open-source video generation framework.   [Github,Project Page]

World Model and Video Generation   **MSRA**
Led by Researcher Junliang Guo and Tianyu He   *11 2024 - 06 2025*

- **MineWorld**: MineWorld: a Real-Time and Open-Source Interactive World Model on Minecraft   [Github]
- **DiagD**: Fast Autoregressive Video Generation with Diagonal Decoding.   [Paper]
- **Geometry Forcing**: Marrying Video Diffusion and 3D Representation for Consistent World Modeling.   [Paper]

PROJECTS

- **Implementation of Deeplearning System** Follwing the course of CMU10714, accomplish a deep learning system that includes compuatation graph, auto differentiation, optimizer and cuda accleration.
- **Relevance Augmented Connected Papers** Improving balance between accuracy and diversity to meet users' research paper needs by semantic similarity-based retrieval
- **SuitFormer: Case-level representation learning for Identifying Frivolous Lawsuit** long text representation learning in legal domain to address long-tail distribution of frivolous lawsuit

HONERS

- **China Undergraduate Mathematical Contest in Modeling** — Second Prize, 10 2023
- **Student Extracurricular Academic Science and Technology Works Competition** — Special Prize, 03 2023
- **The Chinese Mathematical Competition** — First Prize, 11 2022
- **Huashu Cup Mathematical Contest in Modeling** — Second Prize, 08 2022

EXTRACURRICULAR ACTIVITIES

- **Presenter of Introduction to Linux** of "Missing Classes" lectures in RUC Computer Association — 11 2023
- **Presenter of AITIME Debate** about 3D digital human development — 08 2023