Jincheng (Jeffrey) YANG

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Research Interests

My research interest focuses on intergrating 3D generative methods into embodied tasks, and building a physically-reliable world model for embodied AI agents. I'm also broadly interested in machine learning, computer vision, and robotics.

Education

Shanghai Jiao Tong University Shanghai, China
Bachelor of Computer Science *Sep. 2021 – Jun. 2025 (Expected)*

- Member of ACM Honor Class, an elite CS program for highly capable students
- **GPA**: 3.92.
- **Core course scores**: Machine Learning (A), Data Mining (A+), Computer Vision (A+), Deep Learning (A), Large Language Model (A+), Reinforcement Learning (A+), Computer Graphics (A).

Massachusetts Institute of Technology Cambridge, MA, USA
Visiting Student *Jul. 2024 - Dec. 2024 (Expected)*

- Advised by Prof. Chuang Gan and Prof. Joshua Tenenbaum
- Research on 3D vision, language, and action modeling for embodied AI agents.

Selected Honors & Awards

Programming Competition

- Silver Medal, The 2022 ACM-ICPC Asia Shanghai Regional Contest
- Silver Medal, The 2021 ACM-ICPC Asia Nanjing Regional Contest
- Silver Medal, The 2021 ACM-CCPC Contest Guangzhou Site

Scholarship

- 2021-2022 Ruiyuan-Hongshan Scholarship (Top 5% in ACM Honor Class 2021)
- 2021-2022 & 2022-2023, Zhiyuan Honorary Scholarship

Publication & Manuscripts[1]

Articulate Anything: Open-vocabulary 3D Articulated Object Modeling [link] *Submit to ICLR, 2025*
Jincheng Yang*, Xiaowen Qiu*, Yian Wang, Zhehuan Chen, Yufei Wang, Tsun-Hsuan Wang, Zhou Xian, Chuang Gan*

- We propose *Articulate Anything*, an automated framework that is able to convert any rigid 3D mesh into its articulated counterpart in an open-vocabulary manner. Given a 3D mesh, our framework utilizes advanced Vision-Language Models and visual prompting techniques to extract semantic information, allowing for both the segmentation of object parts and the construction of functional joints.

3D-VLA: A 3D Vision-Language-Action Generative World Model [link] *ICML, 2024*
*Haoyu Zhen, Xiaowen Qiu, Peihao Chen, **Jincheng Yang**, Xin Yan, Yilun Du, Yining Hong, Chuang Gan*

- We propose 3D-VLA by introducing a new family of embodied foundation models that seamlessly link 3D perception, reasoning, and action through a generative world model.

VirtualCommunity: A Generative Social World for Embodied AI [link] *Submit to CVPR, 2025*
*Qinhong Zhou, Hongxin Zhang, Yutian Chen, Zheyuan Zhang, Xiangye Lin, **Jincheng Yang**, Lixing Fang, Jiageng Liu, Xinyu Sun, Zeyuan Wang, Sunli Chen, Chuang Gan*

- We present Virtual Community, a social world simulation platform designed to support open-world embodied AI research, featuring large-scale community scenarios derived from the real world.
- Virtual Community introduces two key features to scale up social world simulation powered by generative AI: scalable 3D scene creation, and embodied agent community generation.

[1] * denotes equal contribution.

Function Anything: Functional-aware 3D Assets Generation *In progress*

Chunru Lin, **Jincheng Yang***, Chuang Gan*

- We propose Function Anything, a novel framework that generates functional-aware 3D assets by learning the functional semantics of 3D objects.

Other Projects

Kinematic Motion Diffusion: Towards Semantic-adaptive Motion Synthesis via Kinematic Guidance

Course Project for SJTU ACM Class 2021 Computer Vision Course (2023-2024-1-AI3604)

- This project presents KMD, a novel motion synthesis method that leverages kinematic guidance to generate semantically adaptive human motion. KMD outperforms the baselines in terms of both motion quality and diversity.
- The techinical report paper is submitted and accepted by International Conference on Multimedia Systems and Signal Processing (ICMSSP), 2024.
- Scored 100.0/100.0.

DenseMono: Adapting DenseNet Arichitecture for Efficient Monocular Depth Estimation

Course Project for SJTU ACM Class 2021 Machine Learning Course (2022-2023-2-CS3308)

- This project presents DenseMono, a relatively simple and extensible network architecture based on DenseNet for estimating depth maps from single images. DenseMono achieves a considerable accuracy with significantly less trainable parameters and iteration numbers compared with the state-of-the-art methods.
- Scored 29.1/30.0.

Teaching Experience

Computer Programming (2023-2024-1)-CS1953-1 *Sep. 2023 – Jan. 2024*
Senior Teacher Assistant[2]

Principle and Practice of Computer Algorithms (2022-2023-3)-CS1952-1 *Jun. 2023 – Aug. 2023*
Senior Teacher Assistant[2]

Data Structure (2022-2023-2)-CS1951-1 *Feb. 2023 – Jun. 2023*
Senior Teacher Assistant[2]

Computer Programming (2022-2023-1)-CS1953-1 *Sep. 2022 – Jan. 2023*
Senior Teacher Assistant[2]

Skills

- **Programming**: Python, C++, Java / Kotlin, MATLAB.
- **Languages**: Chinese (native), English (fluent), Japanese (basic).
  - **TOEFL**: 111/120, Reading 30, Listening 30, Speaking 23, Writing 28.
- **Hobbies**: Birdwatching, EDM music production.

[2]Senior Teacher Assistant is the highest level of teaching assistant in SJTU ACM Honor Class, who is responsible for leading the teaching team and designing the course materials.