Jiawei Liu
Curriculum Vitae

National University of Singapore, Singapore
✆ (+65) 94484317
✉ jiawei.liu@u.nus.edu
⌂ https://jia-wei-liu.github.io/

Education

Jan. 2021 – Dec. 2024	**Doctor of Philosophy**, *Institute of Data Science*, **National University of Singapore**, Advisor: Prof. Mike Zheng Shou, Co-advisor: Prof. Jussi Keppo.
Sept. 2018 – July 2020	**Master of Science**, *Department of Engineering Mechanics*, **Tsinghua University**, Advisor: Prof. Gexue Ren, Cumulative GPA: 3.70/4.0.
Sept. 2014 – June 2018	**Bachelor of Engineering**, *Honors College*, **Northwestern Polytechnical University**, Cumulative GPA: 3.80/4.0, 91.84/100, Rank: 2/145, Major GPA: 3.88/4.0, 93.96/100.

Research Interests

Multi-Modal 3D/4D/Video Dynamic Scene Reconstruction, Generation, and Perception, with applications on Content Creation & Perception, Ego-Exocentric Vision, AR/VR, Metaverse, Robotics.

Publications

Feb. 2024	**Jia-Wei Liu**, Yan-Pei Cao, Jay Zhangjie Wu, Weijia Mao, Yuchao Gu, Rui Zhao, Jussi Keppo, Ying Shan, Mike Zheng Shou, "DynVideo-E: Harnessing Dynamic NeRF for Large-Scale Motion- and View-Change Human-Centric Video Editing", Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2024.
July 2023	**Jia-Wei Liu**, Yan-Pei Cao, Tianyuan Yang, Zhongcong Xu, Jussi Keppo, Ying Shan, Xiaohu Qie, Mike Zheng Shou, "HOSNeRF: Dynamic Human-Object-Scene Neural Radiance Fields from a Single Video", Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) 2023.
Sep. 2022	**Jia-Wei Liu**, Yan-Pei Cao, Weijia Mao, Wenqiao Zhang, David Junhao Zhang, Jussi Keppo, Ying Shan, Xiaohu Qie, Mike Zheng Shou, "DeVRF: Fast Deformable Voxel Radiance Fields for Dynamic Scenes", Advances in Neural Information Processing Systems (NeurIPS) 2022.
Aug. 2019	**Jia-Wei Liu**, Jia-Peng Liu, Xuan-Bo Shu, Aki Mikkola, Ge-Xue Ren, "An efficient multibody dynamic model of three-dimensional meshing contacts in helical gear-shaft system and its solution", Mechanism and Machine Theory 142 (2019) 103607.
Feb. 2019	**Jia-Wei Liu**, Jia-Peng Liu, Jia-Lun Yao, Ge-Xue Ren, "Dynamic characteristics of helical gear based on Arbitrary Lagrangian Eulerian formulation", in: ECCOMAS 2019 Multibody Dynamic Conference, Duisburg, Germany, 2019.
Feb. 2024	Grauman et al. [Singapore Site Author List: Joya Chen, **Jia-Wei Liu**, Xinzhu Fu, Chenan Song, Mike Zheng Shou.], "Ego-Exo4D: Understanding Skilled Human Activity from First- and Third-Person Perspectives", CVPR 2024.
Feb. 2024	Zhongcong Xu, Jianfeng Zhang, Jun Hao Liew, Hanshu Yan, **Jia-Wei Liu**, Chenxu Zhang, Jiashi Feng, Mike Zheng Shou, "MagicAnimate: Temporally Consistent Human Image Animation using Diffusion Model", CVPR 2024.
Feb. 2024	Lingmin Ran, Xiaodong Cun, **Jia-Wei Liu**, Rui Zhao, Zijie Song, Xintao Wang, Jussi Keppo, Mike Zheng Shou, "Adding Universal Compatibility of Plugins for Upgraded Diffusion Model", CVPR 2024.
Apr. 2024	Ming Li, Pan Zhou, **Jia-Wei Liu**, Jussi Keppo, Min Lin, Shuicheng Yan, Xiangyu Xu, "Instant3D: Instant Text-to-3D Generation", International Journal of Computer Vision.

Feb. 2024   Yuchao Gu, Yipin Zhou, Bichen Wu, Licheng Yu, **Jia-Wei Liu**, Rui Zhao, Jay Zhangjie Wu, David Junhao Zhang, Mike Zheng Shou, Kevin Dechau Tang, "VideoSwap: Customized Video Subject Swapping with Interactive Semantic Point Correspondence", CVPR 2024.

Feb. 2024   Joya Chen, Zhaoyang Lv, Shiwei Wu, Kevin Qinghong Lin, Chenan Song, Difei Gao, **Jia-Wei Liu**, Ziteng Gao, Dongxing Mao, Mike Zheng Shou, "LIVE: Online Large Video-Language Model for Streaming Video", CVPR 2024.

July 2024   Rui Zhao, Yuchao Gu, Jay Zhangjie Wu, David Junhao Zhang, **Jia-Wei Liu**, Weijia Wu, Jussi Keppo, Mike Zheng Shou, "MotionDirector: Motion Customization of Text-to-Video Diffusion Models", European Conference on Computer Vision (ECCV) 2024.

July 2023   Ming Li, Xiangyu Xu, Hehe Fan, Pan Zhou, Jun Liu, **Jia-Wei Liu**, Jiahe Li, Jussi Keppo, Mike Zheng Shou, Shuicheng Yan, "STPrivacy: Spatio-Temporal Privacy-Preserving Action Recognition", ICCV 2023.

Apr. 2023   Jiang Cui, **Jia-Wei Liu**, Ge-Xue Ren, Zhihua Zhao, Xiaoting Rui, "An amplitude-nested surrogate model for nonlinear response using double-layer Hilbert–Huang transform", Mechanical Systems and Signal Processing 188 (2023) 109982.

Sep. 2021   Jiang Cui, Zhi-Hua Zhao, **Jia-Wei Liu**, Peng-Xiang Hu, Ru-Neng Zhou, Ge-Xue Ren, "Uncertainty analysis of mechanical dynamics by combining response surface method with signal decomposition technique", Mechanical Systems and Signal Processing 158 (2021) 107570.

Mar. 2020   Jiang Cui, Zhi-Hua Zhao, **Jia-Wei Liu**, Xuan-Bo Shu, Ge-Xue Ren, "Uncertainty analysis of mechanical dynamic using HHT and LMD", in: 25th International Congress of Theoretical and Applied Mechanics (25th ICTAM), 2020.

Publications In Submission ([*] Co-First Authors, [†] Project Lead.)

Mar. 2024   David Junhao Zhang[*], Jay Zhangjie Wu[*], **Jia-Wei Liu**[*], Rui Zhao, Lingmin Ran, Yuchao Gu, Difei Gao, Mike Zheng Shou, "Show-1: Marrying Pixel and Latent Diffusion Models for Text-to-Video Generation", In submission to International Journal of Computer Vision.

Mar. 2024   Yufei Shi[*], Beijia Lu[*], **Jia-Wei Liu**[†], Ming Li, Mike Zheng Shou, "ColonNeRF: Hierarchical Neural Radiance Fields for High-Fidelity Long-Sequence Colon Reconstruction", In submission to IEEE Journal of Biomedical and Health Informatics (JBHI).

Jan. 2024   Xue-Feng Zhu[*], Tianyang Xu[*], Jian Zhao[*], **Jia-Wei Liu**[*], Kai Wang, Gang Wang, Jianan Li, Zhihao Zhang, Qiang Wang, Lei Jin, Zheng Zhu, Junliang Xing, Xiao-Jun Wu, "Evidential Detection and Tracking Collaboration: New Problem, Benchmark and Algorithm for Robust Anti-UAV System", In submission to IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI).

May 2024   Weijia Mao, Yan-Pei Cao, **Jia-Wei Liu**, Zhongcong Xu, Mike Zheng Shou, "ShowRoom3D: Text to High-Quality 3D Room Generation Using 3D Priors", In submission to NeurIPS 2024.

May 2024   Lingmin Ran, Chenyang Si, Xudong Lin, **Jia-Wei Liu**, Rui Zhao, Jay Zhangjie Wu, Zijie Song, Ziwei Liu, Jussi Keppo, Mike Zheng Shou, "X-PlugVid: Versatile Adaptation of Image Plugins for Controllable Video Generation", In submission to NeurIPS 2024.

Mar. 2024   Bardienus Pieter Duisterhof, Mandi Zhao, Yunchao Yao, **Jia-Wei Liu**, Mike Zheng Shou, Shuran Song, Jeffrey Ichnowski, "MD-Splatting: Learning Metric Deformation from 4D Gaussians in Highly Deformable Scenes", In submission.

Mar. 2024   Jay Zhangjie Wu, Guian Fang, Haoning Wu, Xintao Wang, Yixiao Ge, Xiaodong Cun, David Junhao Zhang, **Jia-Wei Liu**, Yuchao Gu, Rui Zhao, Weisi Lin, Wynne Hsu, Ying Shan, Mike Zheng Shou, "Towards A Better Metric for Text-to-Video Generation", In submission to ECCV 2024.

Selected Honors & Awards

Dec. 2023	**SINGAPORE DATA SCIENCE CONSORTIUM (SDSC) DISSERTATION RESEARCH FELLOWSHIP 2023 (10000 S$)** (Recognized as 1 out of 10 most innovative and impactful PhD students focusing on Data Science in Singapore in 2023).
Dec. 2023	Show Lab Annual Award (4000 S$), National University of Singapore.
Oct. 2023	Research Incentive Award, National University of Singapore.
Oct. 2022	NeurIPS 2022 Scholar Award.
Jan. 2021	President's Graduate Fellowship (PGF), National University of Singapore.
June 2020	Outstanding Graduate, Tsinghua University (Awarded to top 8% students).
Oct. 2019	Scholarship of Second Prize in Tsinghua University (Awarded to top 5% students).
Jan. 2018	Scholarship of Innovation and Entrepreneurship in Honors College.
2014 – 2017	3×Scholarship of First Prize in Honors College.
2014 – 2017	3×Scholarship of Outstanding Student in Northwestern Polytechnical University.
2014 – 2015	National Scholarship (Awarded to top 1% students in Honors College).

Teaching Experience

Jan. 2024 – May 2024	**Guest Lecturer for Advanced Topics in Artificial Intelligence**, NUS, Singapore. Give a guest lecture on Advanced 3D Intelligence for CS6208: Advanced Topics in Artificial Intelligence.
Jan. 2022 – May 2023	2×**Teaching Assistant for Computer Vision and Deep Learning**, NUS, Singapore. Responsible for designing homework, revising homework, tutorials, and Q&A sessions.
Sept. 2018 – Jan. 2020	2×**Teaching Assistant for Theoretical Mechanics**, Tsinghua University, China. Responsible for designing homework, revising homework, experiments lectures, and Q&A sessions.

Academic Attendance and Services

Attendance	NeurIPS 2022@New Orleans, Meta Ego4D Meetup 2023@New York, ICCV 2023@Paris, Meta Research Summit 2024@Seattle, CVPR 2024@Seattle, ECCOMAS 2019@Duisburg.
Reviewer & PC Member	CVPR 2023-2024, ICCV 2023, ECCV 2024, SIGGRAPH 2024, NeurIPS 2024, MICCAI 2024, CGI 2024, SOICT 2023, ACMMM 2023, IEEE TNNLS.