

# Jiawei Liu

## Curriculum Vitae

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### Education

- Jan. 2021 – **Doctor of Philosophy**, *Institute of Data Science, National University of Singapore*,  
 Jan. 2025 Advisor: Prof. Mike Zheng Shou, Co-advisor: Prof. Jussi Keppo.
- Sept. 2018 – **Master of Science**, *Department of Engineering Mechanics, Tsinghua University*,  
 July 2020 Advisor: Prof. Gexue Ren, Cumulative GPA: 3.70/4.0.
- Sept. 2014 – **Bachelor of Engineering**, *Honors College, Northwestern Polytechnical University*,  
 June 2018 Cumulative GPA: 3.80/4.0, 91.84/100, Rank: 2/145, Major GPA: 3.88/4.0, 93.96/100.

### Research Interests

**3D/4D/Video Dynamic Scene Reconstruction, Editing, and Generation, with applications on Egocentric-Exocentric Vision, Robotics, Medical AI, and Metaverse.**

### 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.

- 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 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 International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) 2024.
- Oct. 2023 Ming Li, Pan Zhou, **Jia-Wei Liu**, Jussi Keppo, Min Lin, Shuicheng Yan, Xiangyu Xu, "Instant3D: Instant Text-to-3D Generation", In submission to International Journal of Computer Vision.
- 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.
- Mar. 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 European Conference on Computer Vision (ECCV) 2024.
- Mar. 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", In submission to ECCV 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\$) (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).
- 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 – **Guest Lecturer for Advanced Topics in Artificial Intelligence**, NUS, Singapore.
- May 2024 Give a guest lecture on Advanced 3D Intelligence for CS6208: Advanced Topics in Artificial Intelligence.
- Jan. 2022 – 2×**Teaching Assistant for Computer Vision and Deep Learning**, NUS, Singapore.
- May 2023 Responsible for designing homework, revising homework, tutorials, and Q&A sessions.
- Sept. 2018 – 2×**Teaching Assistant for Theoretical Mechanics**, Tsinghua University, China.
- Jan. 2020 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, MICCAI 2024, SOICT 2023, ACM MM 2023, IEEE TNNLS.