

Minghua Liu

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EDUCATION

University of California, San Diego September 2019 - Present
Ph.D. in Computer Science and Engineering

Advisor: Hao Su GPA: 4.0

Tsinghua University August 2015 - July 2019

B.Eng. in Computer Science and Technology

GPA: 3.86 Rank: 3/154

EXPERIENCES

Research Intern – NVIDIA, Santa Clara July 2024 - TBD
Mentor: Sanja Fidler

- TBD.

Research Intern – Qualcomm AI, San Diego June 2022 - November 2022
Mentor: Hao Su, Hong Cai, Yinhao Zhu

- Worked on 3D foundation models.

Research Intern – Waymo Research, Remote June 2021 - November 2021
Mentor: Yin Zhou and Charles Qi

- Worked on label-efficient semantic segmentation for LiDAR point clouds.

Research Intern – Adobe Research, Remote June 2020 - November 2020
Mentor: Radomir Mech and Minhyuk Sung

- Worked on 3D mesh deformation.

Research Intern – SenseTime Group Limited, Beijing January 2019 - July 2019
Mentor: Jing Shao and Lu Sheng

- Worked on 3D point cloud completion.

Research Intern – Intelligent Decision Making Group, University of Southern California July 2018 - September 2018
Advisor: Sven Koenig

- Worked on multi-agent path finding.

Research Intern – Graphics and Geometric Computing Group, Tsinghua University March 2017 - September 2018
Advisor: Shi-Min Hu

- Worked on 3D reconstruction and SLAM.

PUBLICATIONS AND MANUSCRIPTS

Publications

- **Minghua Liu***, Ruoxi Shi*, Kaiming Kuang*, Yinhao Zhu, Xuanlin Li, Shizhong Han, Hong Cai, Fatih Porikli, Hao Su. OpenShape: Scaling Up 3D Shape Representation Towards Open-World Understanding. NeurIPS 2023.

- **Minghua Liu***, Chao Xu*, Haiyan Jin*, Linghao Chen*, Mukund Varma T, Zexiang Xu, Hao Su. One-2-3-45: Any Single Image to 3D Mesh in 45 Seconds without Per-Shape Optimization. NeurIPS 2023.
- **Minghua Liu**, Yin hao Zhu, Hong Cai, Shizhong Han, Zhan Ling, Fatih Porikli, Hao Su. PartSLIP: Low-Shot Part Segmentation for 3D Point Clouds via Pretrained Image-Language Models. CVPR. 2023.
- **Minghua Liu***, Xuanlin Li*, Zhan Ling*, Yangyan Li, and Hao Su. Frame Mining: a Free Lunch for Learning Robotic Manipulation from 3D Point Clouds. In *Proceedings of Machine Learning Research (CoRL)*. 2022.
- **Minghua Liu**, Yin Zhou, Charles R. Qi, Boqing Gong, Hao Su, and Dragomir Anguelov. LESS: Label-Efficient Semantic Segmentation for LiDAR Point Clouds. In *Proceedings of the European Conference on Computer Vision (ECCV)*. Oral. 2022.
- Xinyue Wei*, **Minghua Liu***, Zhan Ling, and Hao Su. Approximate Convex Decomposition for 3D Meshes with Collision-Aware Concavity and Tree Search. SIGGRAPH (journal track). 2022.
- **Minghua Liu**, Minhyuk Sung, Radomir Mech, and Hao Su. DeepMetaHandles: Learning Deformation Meta-Handles of 3D Meshes with Biharmonic Coordinates. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. Oral. 2021.
- **Minghua Liu**, Xiaoshuai Zhang, and Hao Su. Meshing Point Clouds with Predicted Intrinsic-Extrinsic Ratio Guidance. In *Proceedings of the European Conference on Computer Vision (ECCV)*. 2020.
- **Minghua Liu**, Lu Sheng, Sheng Yang, Jing Shao, and Shi-Min Hu. Morphing and Sampling Network for Dense Point Cloud Completion. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. 2020.
- **Minghua Liu**, Hang Ma, Jiaoyang Li, and Sven Koenig. Task and Path Planning for Multi-Agent Pickup and Delivery. In *Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. 2019.
- Xuanlin Li*, Yunhao Fang*, **Minghua Liu**, Zhan Ling, Zhuowen Tu, Hao Su. Distilling Large Vision-Language Model with Out-of-Distribution Generalizability. ICCV 2023.
- Xiaoshuai Zhang*, Rui Chen*, Fanbo Xiang**, Yuzhe Qin**, Jiayuan Gu**, Zhan Ling**, **Minghua Liu****, Peiyu Zeng**, Songfang Han***, Zhiao Huang***, Tongzhou Mu***, Jing Xu, and Hao Su. Close the Visual Domain Gap by Physics-Grounded Active Stereovision Depth Sensor Simulation. T-RO. 2023.
- Fanbo Xiang, Yuzhe Qin, Kaichun Mo, Yikuan Xia, Hao Zhu, Fangchen Liu, **Minghua Liu**, Hanxiao Jiang, Yifu Yuan, He Wang, Li Yi, Angel X Chang, Leonidas J Guibas, and Hao Su. SAPIEN: A simulated part-based interactive environment. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. Oral. 2020.
- Jiachen Li, Quan Vuong, Shuang Liu, **Minghua Liu**, Kamil Ciosek, Henrik Christensen, and Hao Su. Multi-task Batch Reinforcement Learning with Metric Learning. In *Advances in Neural Information Processing Systems (NeurIPS)*. 2020.
- Sheng Yang, Beichen Li, **Minghua Liu**, Yu-Kun Lai, Leif Kobbelt, and Shi-Min Hu. HeteroFusion: Robust Scene Reconstruction using Heterogeneous Sensors on Robots. In *IEEE Transactions on Visualization and Computer Graphics (TVCG)*. 2019.
- Sheng Yang, Kang Chen, **Minghua Liu**, Hongbo Fu, and Shi-Min Hu. Saliency-aware Real-time Volumetric Fusion for Object Reconstruction. In *Computer Graphics Forum (Pacific Graphics)*. 2017.

Manuscripts

- **Minghua Liu***, Ruoxi Shi*, Linghao Chen*, Zhuoyang Zhang*, Chao Xu*, Xinyue Wei, Hansheng Chen, Chong Zeng, Jiayuan Gu, Hao Su. One-2-3-45++: Fast Single Image to 3D Objects with Consistent Multi-View Generation and 3D Diffusion. Under review. 2023.
- Liu Dai, Fanbo Xiang, **Minghua Liu**, Hao Su CGI-Scene: Controllable Generation of Open-Vocabulary Interactive Scenes. Under review. 2023.
- Yuchen Zhou, Jiayuan Gu, Yunhao Fang, **Minghua Liu**, Hao Su. PartSLIP++: Enhancing Low-Shot 3D Part Segmentation via Multi-View Instance Segmentation and Maximum Likelihood Estimation. Under review. 2023.
- Ruoxi Shi, Hansheng Chen, Zhuoyang Zhang, **Minghua Liu**, Chao Xu, Xinyue Wei, Linghao Chen, Chong Zeng, Hao Su Zero123++: A Single Image to Consistent Multi-view Diffusion Base Model. Technical Report. 2023.
- Tongzhou Mu, **Minghua Liu**, Hao Su. Learning Reusable Dense Rewards for Multi-Stage Tasks. Under review. 2023.

SERVICES

Conference Reviewer: CVPR'21'22'23'24, ICCV'21'23, ECCV'22, SIGGRAPH'23, SIGGRAPH Asia'23, NeurIPS'21'22'23, ICLR'22'23'24, ICML'22'23, AAAI'23'24

Journal Reviewer: T-RO, RA-L, TPAMI, TVCG, CVMJ

INVITED TALKS

TechBeat	October 23
Qualcomm	September 23
Stanford IPRL	August 23
Vast AI	July 23
Qualcomm	November 22

SELECTED AWARDS & HONORS

Qualcomm Innovation Fellowship	2020
Powell Fellowship	2019
Zhong-Shimo Scholarship	2018
China National Scholarship	2017
Silver Medal, National Olympiad in Informatics	2014