Ruihang Chu

My research areas include **3D & Robotic Perception**, **Diffusion-based 3D Generation**, **Image Retrieval**, and **Large Language Model**, with 13 papers (6 first-author ones). Please refer to my homepage for more details. Feel free to reach me by phone at +86 13051566630 or by email at rhchu[at]cse.cuhk.edu.hk.

EDUCATION

- **The Chinese University of Hong Kong** — **Shatin, Hong Kong**
  Ph.D, Computer Science and Engineering — 2020.08 – 2024.07
  - **Supervisor:** Prof. Jiaya Jia (IEEE Fellow) and Prof. Chi-Wing Fu
- **Beihang University** — **Haidian, Beijing**
  M.Phil, State Key Laboratory of Virtual Reality Technology and Systems — 2017.08 – 2020.07
  - **Supervisor:** Prof. Yuru Zhang
  - **Ranking:** 1 / 42
- **Beihang University** — **Haidian, Beijing**
  B.Eng, Mechanical Engineering and Automation — 2013.08 – 2017.07
  - **Ranking:** 2 / 209 (GPA: 3.8 / 4.0)

SELECTED PUBLICATIONS

1 Command-driven Articulated Object Understanding and Manipulation
Ruihang Chu, Zhengzhe Liu, Xiaoqing Ye, Xiao Tan, Xiaojuan Qi, Chi-Wing Fu, Jiaya Jia
*IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2023

2 TWIST: Two-Way Inter-label Self-Training for Semi-supervised 3D Instance Segmentation
Ruihang Chu, Xiaoqing Ye, Zhengzhe Liu, Xiao Tan, Xiaojuan Qi, Chi-Wing Fu, Jiaya Jia
*IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2022

3 ICM-3D: Instantiated Category Modeling for 3D Instance Segmentation
Ruihang Chu, Yukang Chen, Lu Qi, Tao Kong, Lei Li
*IEEE Robotics and Automation Letters (**RA-L**)*, 2021

4 Vehicle Re-identification with Viewpoint-aware Metric Learning
Ruihang Chu, Yifan Sun, Yadong Li, Zheng Liu, Chi Zhang, Yichen Wei
*IEEE International Conference on Computer Vision (**ICCV**)*, 2019

5 Co-actuation: A Method for Achieving High Stiffness and Low Inertia for Haptic Devices
Ruihang Chu, Yuru Zhang, Hongdong Zhang, Weiliang Xu, Jee-Hwan Ryu, Dangxiao Wang
*IEEE Transactions on Haptics (**ToH**)*, 2020

6 TriVol: Point Cloud Rendering via Triple Volumes
Tao Hu, Xiaogang Xu, **Ruihang Chu**, Jiaya Jia
*IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2023

7 Simultaneous Multi-task Learning for 6-DoF Grasp Pose Estimation
Yiming Li, Tao Kong, **Ruihang Chu**, Yifeng Li, Peng Wang, Lei Li
*IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**)*, 2021

8 An intuitive end-to-end human-UAV interaction system for field exploration
Ran Jiao, Zhaowei Wang, **Ruihang Chu**, Mingjie Dong, Yongfeng Rong, Wusheng Chou
Frontiers in Neurorobotics, 2020

9 Scale-aware Automatic Augmentation for Object Detection
Yukang Chen, Yanwei Li, Tao Kong, **Ruihang Chu**, Lei Li, Jiaya Jia
*IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2021

PAPERS IN SUBMISSION

10 DiffComplete: Diffusion-based Generative 3D Shape Completion
Ruihang Chu, Enze Xie, Shentong Mo, Zhenguo Li, Matthias Nießner, Chi-Wing Fu, Jiaya Jia
arXiv:2306.16329, 2023

11 DiT-3D: Exploring Plain Diffusion Transformers for 3D Shape Generation
Shentong Mo, Enze Xie, **Ruihang Chu**, Lanqing Hong, Matthias Nießner, Zhenguo Li
Submitted to ***NeurIPS***, 2023

12 Mask-Attention-Free Transformer for 3D Instance Segmentation
Xin Lai, Yuhui Yuan, **Ruihang Chu**, Yukang Chen, Han Hu, Jiaya Jia
Submitted to ***ICCV***, 2023 (2 Weak Accept, 1 Borderline)

13 Efficient 3D Object Detection in <1.0M Model Size
Yukang Chen, **Ruihang Chu**, Yanwei Li, Tao Kong, Lu Qi, Liwei Wang, Jiaya Jia

INTERNSHIPS

- **Noah's Ark Lab, Huawei** 2023.06 – present
  PanGu Large Language Model Team (Work with Dr. Enze Xie and Dr. Xiaozhe Ren)
- **Technical University of Munich** 2023.01 – present
  Diffusion-based 3D Completion (Remotely supervised by Prof. Matthias Nießner)
  Results were DiffComplete [10] and DiT-3D [11] submitted to NeurIPS 2023.
- **Baidu** 2021.05 – 2023.01
  3D & Robotic Perception (Work with Dr. Xiaoqing Ye and Dr. Xiao Tan)
  Results were Cart [1] in CVPR 2023 and TWIST [2] in CVPR 2022.
- **AI Lab, ByteDance** 2019.12 – 2021.04
  3D Recognition (Work with Dr. Tao Kong and Prof. Lei Li)
  Results were ICM-3D [3] in RA-L, [7] in IROS 2021, and AutoAug [9] in CVPR 2021.
- **Megvii** 2018.09 – 2019.11
  Image Retrieval and Deep Metric Learning (Work with Dr. Yifan Sun)
  Result was VANet [4] (citation>170) in ICCV 2019.

SELECTED AWARDS

- CUHK Vice-Chancellor Scholarship (The highest scholarship from CUHK) 2020-2024
- National Scholarship 2019
- The 1^{st} Prize of Beihang Science and Technology Innovation Scholarship (Top 0.2%) 2016
- The 1^{st} Prize of AVI Industry Scholarship (Top 0.2%) 2016
- Beihang Outstanding Graduate Award (Twice) 2017,2020
- The 1^{st} Prize of Beihang Postgraduate Students Scholarship (Top 5%) 2017
- The 3^{rd} Prize of National College Robot Competition (Twice) 2015,2016
- The 1^{st} Prize of China Intelligent Product Design Competition 2015
- The 1^{st} Prize of Beihang Academic Scholarship (Top 5%) 2015
- The 1^{st} Prize of Timken Enterprise Scholarship (Top 5%) 2014

ACTIVITIES

- **Reviewer:** CVPR, ICCV, ECCV, NeurIPS, AAAI, 3DV, IROS, T-PAMI, T-IP, RA-L.
- **Patents:** CN114723949A, CN114648676A, CN114282581A, CN112258512A, CN106335048A, and etc.
- **Visiting Studies:** Politecnico di Torino, Tsinghua University, HKUST, Seoul National University.