

EDUCATION

The Hong Kong University of Science and Technology | Robotics (PhD) Sep 2020 – Now
Institute: Robotic Institute
Supervisor: [Qifeng Chen](#) and [Michael Yu Wang](#)

Sun Yat-sen University | Software Engineering (Master) Aug 2017 – Jun 2019
Institute: School of Data and Computer Science
Supervisor: [Hui Cheng](#)
GPA: 4.0

South China Normal University | Communication Engineering (Bachelor) Sep 2013 – Jul 2017
Institute: School of Physics and Communication Engineering
GPA: 3.71 Ranking: 3/138

EXPERIENCE

- **XR Lab, DAMO Academy, Alibaba Group** Jun 2023 – Jun 2024
Research Intern, supervised by Yisheng He, Weihao Yuan, and Zilong Dong
- **RAPID Lab, Sun Yat-sen University** Jul 2019 – Aug 2020
Research Assistant, supervised by Hui Cheng
- **Robotic Group, SenseTime** Mar 2017 – Aug 2017
Research Intern, supervised by Zhanpeng Zhan and Tao Zhou

RESEARCH INTERESTS

- **Perception for Grasping and Manipulation:** 6-DoF grasp pose detection, instance grasping
- **Pose Estimation:** generalized object pose estimation
- **System Identification:** recovering object physical properties from visual observation
- **Cloth manipulation:** Bayesian inference and differential modeling for cloth state estimation and manipulation

REPRESENTATIVE PUBLICATIONS

- [Gaussian-Informed Continuum for Physical Property Identification and Simulation](#)
[Junhao Cai](#)*, Yuji Yang*, Weihao Yuan, Yisheng He, Zilong Dong, Liefeng Bo, Hui Cheng, Qifeng Chen
Neural Information Processing Systems (**NeurIPS**), 2024 (**Oral** | **Percentage: 0.46%**)
- [OV9D: Open-Vocabulary Category-Level 9D Object Pose and Size Estimation](#)
[Junhao Cai](#)*, Yisheng He*, Weihao Yuan, Siyu Zhu, Zilong Dong, Liefeng Bo, Qifeng Chen
Robotics and Automation Letters (**RA-L**), 2024
- [Volumetric-based Contact Point Detection for 7-DoF Grasping](#)
[Junhao Cai](#), Jingcheng Su, Zida Zhou, Hui Cheng, Qifeng Chen, Michael Yu Wang
Conference on Robot Learning (**CoRL**), 2022
- [Real-time Collision-free Grasp Pose Detection with Geometry-aware Refinement Using High Resolution Volume](#)
[Junhao Cai](#), Jun Cen, Haokun Wang, Michael Yu Wang
Robotics and Automation Letters (**RA-L**), 2022
- CCAN: Constraint Co-Attention Network for Instance Grasping
[Junhao Cai](#), Xuefeng Tao, Hui Cheng, and Zhanpeng Zhang
IEEE International Conference on Robotics and Automation (**ICRA**), 2020
- [MetaGrasp: Data Efficient Grasping by Affordance Interpreter Network](#)
[Junhao Cai](#), Hui Cheng, Zhanpeng Zhang, and Jingcheng Su.
IEEE International Conference on Robotics and Automation (**ICRA**), 2019

- Grasping Novel Objects by Semi-supervised Domain Adaptation
Junhao Cai, Zhanpeng Zhang, and Hui Cheng
IEEE International Conference on Real-time Computing and Robotics (**RCAR**), 2019
- Fusing Object Context to Detect Functional Area for Cognitive Robots
Hui Cheng (Supervisor), Junhao Cai, Quande Liu, Zhanpeng Zhang, Kai Yang, Chen Change Loy, Liang Lin
IEEE International Conference on Robotics and Automation (**ICRA**), 2018

OTHER PUBLICATIONS

- IPoD: Implicit Field Learning with Point Diffusion for Generalizable 3D Object Reconstruction from Single RGB-D Images
Yushuang Wu, Luyue Shi, Junhao Cai, Weihao Yuan, Lingteng Qiu, Zilong Dong, Liefeng Bo, Shuguang Cui, Xiaoguang Han
Computer Vision and Pattern Recognition Conference (**CVPR**), 2024
- Flipbot: Learning Continuous Paper Flipping via Coarse-to-Fine Exteroceptive-Proprioceptive Exploration
Chao Zhao*, Chunli Jiang*, Junhao Cai, Michael Yu Wang, Hongyu Yu, Qifeng Chen
IEEE International Conference on Robotics and Automation (**ICRA**), 2023
- ERRAs: An Embodied Representation and Reasoning Architecture for Long-Horizon Language-Conditioned Manipulation Tasks
Chao Zhao*, Shuai Yuan*, Chunli Jiang, Junhao Cai, Hongyu Yu, Michael Yu Wang, Qifeng Chen
IEEE Robotics and Automation Letters (**RA-L**), 2023
- Learn to Grasp Via Intention Discovery and Its Application to Challenging Clutter
Chao Zhao*, Chunli Jiang*, Junhao Cai, Hongyu Yu, Michael Yu Wang, Qifeng Chen
IEEE Robotics and Automation Letters (**RA-L**), 2023
- Open-world Semantic Segmentation for LIDAR Point Clouds
Jun Cen, Peng Yun, Shiwei Zhang, Junhao Cai, Di Luan, Mingqian Tang, Ming Liu, Michael Yu Wang
European Conference on Computer Vision (**ECCV**), 2022
- Uncertainty-based Exploring Strategy in Densely Cluttered Scenes for Vacuum Cup Grasping
Kimwa Tung, Jingcheng Su, Junhao Cai, Zhaoliang Wan, Hui Cheng
IEEE International Conference on Robotics and Automation (**ICRA**), 2022
- Open-set 3D Object Detection
Jun Cen, Peng Yun, Junhao Cai, Michael Yu Wang, Ming Liu
International Conference on 3D Vision (**3DV**), 2021
- GCCN: Geometric Constraint Co-attention Network for 6D Object Pose Estimation
Yongming Wen, Yiquan Fang, Junhao Cai, Kimwa Tung, Hui Cheng
ACM International Conference on Multimedia (**ACMMM Oral**), 2021
- Deep Metric Learning for Open World Semantic Segmentation
Jun Cen, Peng Yun, Junhao Cai, Michael Yu Wang, Ming Liu
IEEE/CVF International Conference on Computer Vision (**ICCV**), 2021

PROFESSIONAL SERVICE

- **Reviewer** for RA-L, ICRA, IROS, CVPR, NeurIPS, ICLR

SKILLS

- **Programming:** Python (proficient), C++ (intermediate)
- **Robotic Softwares:** ROS, PyBullet, CoppeliaSim, Isaac Gym, BlenderProc
- **Robotic Hardwares:** Universal Robot (UR), Franka Emika Panda, Baxter, RealSense

AWARDS

- Second Prize Scholarship (**top 10%**), Sun Yat-sen University, 2018
- Second Class Prize, National Mathematical Contest in Modeling, 2016
- Second Class Prize, National Undergraduate Electronics Design Contest in Guangdong division, Ministry of Education and Ministry of Industry and Information Technology, 2015
- First Prize Scholarship (**top 2%**), South China Normal University, 2015
- National Scholarship (**top 0.5%**), Ministry of Education, 2015