

## 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 Oral**, <2% in past years), 2024
- [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
- ERRa: 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 Hardware:** 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