Yifei Dong

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Education

2025 **Duke University**, *Visiting Scholar*, Robot Dexterity Lab, with Dr. Xianyi Cheng

2023 - Now **KTH Royal Institute of Technology**, *PhD Candidate*, Robotics, Computer Science

2019 - 2022 **ETH Zurich**, *M.Sc.*, Mechanical Engineering

2015 - 2019 **Shanghai Jiao Tong University**, *B.Sc.*, Mechanical Engineering
Tsien Hsue-shen Program & Zhiyuan Honors Program of Engineering

Employment

2023 - Now **Robotics, Perception and Learning, KTH**, *Stockholm*
Doctoral Student, with Assoc. Prof. Florian Pokorny
Planning and co-design for robust manipulation.

2022 **Idiap, EPFL**, *Martigny*, *Research Assistant*, with Dr. Sylvain Calinon
Phase estimation on Riemannian manifold. Code contribution: Robotics Code From Scratch

2022 **F&P Robotics**, *Zürich*, *Software Engineer Intern*
Motion planning of door opening and human-robot interaction for a mobile service robot.

2018 **NIO Inc.**, *Shanghai*, *Software Engineer Intern*
LiDAR simulation of an autonomous vehicle in various traffic scenes.

Publications

Journals and Conference Proceedings:

[J1] Yifei Dong, Xianyi Cheng, Florian T. Pokorny, *Characterizing Manipulation Robustness through Energy Margin and Caging Analysis*, Robotics and Automation Letters (RA-L), 2024, presented at ICRA 2025, *Paper* | *Workshop*

[C1] Yifei Dong, Florian T. Pokorny, *Quasi-static Soft Fixture Analysis of Rigid and Deformable Objects*, International Conference on Robotics and Automation (ICRA), 2024, *Paper* | *Website* | *Workshop*

Preprints (*equal contribution):

[1] Yifei Dong*, Yan Zhang*, Sylvain Calinon, Florian T. Pokorny, *Robustness-Aware Tool Selection and Manipulation Planning with Learned Energy-Informed Guidance*, under review, *Preprint*

[2] Yifei Dong*, Shaohang Han*, Xianyi Cheng, Werner Friedl, Rafael I. Cabral Muchacho, Máximo A. Roa, Jana Tumova, and Florian T. Pokorny, *CageCoOpt: Enhancing Manipulation Robustness through Caging-Guided Morphology and Policy Co-Optimization* , under review, *Preprint* | *Website*

[3] David Blanco-Mulero, Yifei Dong, Julia Borras, Florian T. Pokorny and Carme Torras, *T-DOM: A Taxonomy for Robotic Manipulation of Deformable Objects*, under review, *Preprint* | *Website*

[4] Haofei Lu, Yifei Dong, Zehang Weng, Jens Lundell, Danica Kragic, *Grasping a Handful: Sequential Multi-Object Dexterous Grasp Generation*, under review, *Preprint*

[5] Kei Ikemura, Yifei Dong, David Blanco-Mulero, Alberta Longhini, Li Chen, Florian T. Pokorny, *Efficient End-effector Co-Design by Demonstration for Deformable Fragile Object Manipulation*, RSS Workshop on Robot Hardware-Aware Intelligence, 2025, *OpenReview*

[6] David Cáceres Domínguez et al., *The First WARA Robotics Mobile Manipulation Challenge–Lessons Learned*, under review, *Preprint* | *Video*

[7] Yue Chen et al., *WarriorMath: Empowering Mathematical Reasoning for Large Language Models via Expert Battles*, under review, *Preprint*

Academic Activities

Talks and Paper Review:

2025 Oral presentation at ICRA 2025, Atlanta, USA

2025 Guest lecture at Duke University's graduate course, Robotic Manipulation, 2025 Spring

2024 Invited talk at Prof. Joel Burdick's group, California Institute of Technology

2024 Oral presentation at ICRA 2024, Yokohama, Japan

2024 Reviewer for RA-L, IROS, ISRR

Supervision and Teaching:

2025 Supervising master thesis, "Co-design for deformable object manipulation", Kei Ikemura, Li Chen

2025 Supervising semester project, "Deformable object manipulation planning through taxonomy-based abstractions and foundation models", Gawtam Chithra Ramesh

2024, 2025 Teaching assistant in Introduction to Robotics, DD2410, KTH

Experiences

2024 **Mobile Manipulation Challenge, ABB**, *Västerås, Sweden*
Team member of KTH: Custom gripper co-design for multi-task manipulation | Slides

2021 **Robotic Systems Lab, ETH**, *Zürich*, *Graduate Researcher*, with Prof. Marco Hutter
Master thesis: Mobile door state estimation and parameter identification | Thesis
Semester thesis: Contact-implicit MPC for mobile manipulation | Video | Thesis

2020 **Computer Vision and Geometry Lab & Microsoft**, *Zürich*
Course project: Object mesh reconstruction using RGB-D cameras. | Thesis | Git | Video

2019 **SAIC Motor**, *Shanghai*
Bachelor thesis: Strategy optimization of autonomous emergency braking

2018 **Institute of Design and Control Engineering, SJTU**, *Shanghai*
3-DOF plum processing system for surface-curving and core-deprivation. | Video

2017 **FSAE Racing Team, SJTU**, *Shanghai*, *Undergraduate Mechanical Engineer*

2017 **Institute of Intelligent Vehicle, SJTU**, *Shanghai*
Structural design and locomotion formulation of a snake robot. | Video

Awards & Grants

2024 Travel Grant from the Karl Engvers Foundation

2023 European Commission Project (SoftEnable) Grant

2021, 2022 ETH Scholarship for International Students

2019 Excellence Award, BAIC Automobile Invitational Tournament

2018 Tan Kah Kee Invention Award

2016, 2018 General Motors Scholarship

2017 Huawei Scholarship

2016, 2017 Zhiyuan College Honors Scholarship

Skills

Programming Python, C++, MATLAB, C, C#

Tools ROS, Gazebo, Pybullet, Isaac Gym, Git, Docker, Blender, LaTex, PyTorch, Simulink, Unity3D, ANSYS, SolidWorks, CATIA, NX Unigraphics

Language English (TOEFL 109/120), Chinese (native), German (Goethe B1)