

Teng Xue

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RESEARCH INTERESTS

Task and Motion Planning, Contact-rich Manipulation, Optimal Control, Learning from demonstration

EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL) Nov. 2021 — Oct. 2025
Ph.D. in Electrical Engineering
Thesis Topic: Logic-Geometric Robot Planning and Control
Thesis Director: Dr. Sylvain Calinon

ETH Zurich Oct. 2019 — Mar. 2020
Visiting Student, Robotic Systems Lab (RSL)
Semester Project: Learning-based Pose Estimation and Control of Festo BionicSoftHand
Supervisors: Prof. Dr. Marco Hutter, Dr. David Hoeller, Dr. Martin Wermelinger

Shanghai Jiao Tong University Sep. 2017 — Dec. 2020
M.S. in Mechanical Engineering
GPA: 3.73/4.0 (90/100)
Thesis Title: Stable Robot Grasping Based on Visual Perception and Prior Tactile Knowledge Learning
Supervisor: Prof. Weiming Wang

Nanjing University of Aeronautics and Astronautics Sep. 2013 — Jul. 2017
B.S. in Mechanical Engineering (Changkong Honors College)
GPA: 4.2/5.0 (92/100)
Thesis Title: Development of a Recirculating Friction-Driven Skateboard System for Car Assembly

EXPERIENCE

Idiap Research Institute **Martigny, Switzerland**
Research Assistant, Robot Learning and Interaction Group Nov. 2021 — Present

- Developing algorithms to combine symbolic AI and geometric motion planning for long-horizon manipulation.
- Investigating fast and memory-efficient algorithm for contact-rich policy learning.

Flexiv Robotics Inc. **Shanghai, China**
Research Intern Mar. 2021 — Aug. 2021

- Applying deep reinforcement learning for peg-in-hole task.

Stanford Artificial Intelligence laboratory (SAIL), Stanford University **Stanford, CA**
Research Intern May. 2020 — Oct. 2020

- Developing in-hand manipulation simulator for Roller Grasper and applying model-free reinforcement learning for control policy learning.
- Developing universal policy learning through behavior cloning.

Shenzhen DJI Innovation and Technology Co., Ltd **Shenzhen, China**
Mechanical Engineer Intern Jul. 2016 — Aug. 2016

- Designing and fabricating a lightweight gripper using carbon fiber for UAV grasping.

PUBLICATIONS

- **T. Xue**, A. Razmjoo, S. Shetty, and S. Calinon. **Robust Contact-rich Manipulation through Implicit Motor Adaptation**. Submitted to International Journal of Robotics Research (IJRR)
- S. Yuan, L. Shao, Y. Feng, J. Sun, **T. Xue**, C. Yako, J. Bohg, K. Salisbury. **Design and Control of Roller Grasper V3 for In-Hand Manipulation**. IEEE Transactions on Robotics (T-RO), 2024.

- **T. Xue**, A. Razmjoo, S. Shetty, and S. Calinon. **Robust Manipulation Primitive Learning via Domain Contraction**. In Proc. of Conference on Robot Learning (CoRL), 2024.
- Y. Zhang, **T. Xue***, A. Razmjoo*, and S. Calinon. **Logic Dynamic Movement Primitives for Long-horizon Manipulation Tasks in Dynamic Environments**. IEEE Robotics and Automation Letters (RA-L), 2024.
- **T. Xue**, A. Razmjoo, S. Shetty, and S. Calinon. **Logic-Skill Programming: An Optimization-based Approach to Sequential Skill Planning**. In Proc. of Robotics: Science and Systems (RSS), 2024.
- **T. Xue**, A. Razmjoo, and S. Calinon. **D-LGP: Dynamic Logic-Geometric Program for Combined Task and Motion Planning**. In Proc. IEEE Intl Conf. on Robotics and Automation (ICRA), 2024.
- S. Shetty, **T. Xue**, and S. Calinon. **Generalized Policy Iteration using Tensor Approximation for Hybrid Control**. In Proc. Intl Conf. on Learning Representations (ICLR), 2024 (**Spotlight**).
- **T. Xue***, S. Shetty*, and S. Calinon. **Dynamic Programming using Tensor Approximation for Contact-rich Manipulation**. Workshop on Embracing Contacts. IEEE Intl Conf. on Robotics and Automation (ICRA), 2023
- **T. Xue**, H. Girgin, T. Lembono, and S. Calinon. **Demonstration-guided Optimal Control for Long-term Non-prehensile Planar Manipulation**. In Proc. IEEE Intl Conf. on Robotics and Automation (ICRA), pages 4999–5005, 2023.
- W. Liu, W. Wang, Y. You, **T. Xue**, Z. Pan, J. Qi, J. Hu, **Robotic Picking in Dense Clutter via Domain Invariant Learning from Synthetic Dense Cluttered Rendering**. Robotics and Autonomous Systems 147 (2022): 103901.
- **T. Xue**, W. Wang, J. Ma, W. Liu, Z. Pan, M. Han. **Progress and Prospects of Multimodal Fusion Methods in Physical Human–Robot Interaction: A Review**. IEEE Sensors Journal, vol. 20, no. 18, pp. 10355-10370, 15 Sept.15, 2020.

ACADEMIC SERVICE

Reviewer

- **Journal:** IEEE Transactions on Robotics (T-RO), IEEE Robotics and Automation Letters (RA-L), IEEE Sensors Journal
- **Conference:** IEEE International Conference on Robotics and Automation (ICRA), International Conference on Automated Planning and Scheduling (ICAPS),

AWARDS

- **First Prize**, The 6th National Mathematics Contest, 2014
- **Runner-up**, Robomaster-DJI Summer Camp Robot Challenge, 2016;
- **Outstanding Winner (1/8085)**, The 2017 Mathematics Contest in Modeling held by American Consortium for Mathematics and Its Application (COMAP), 2017
- **Fist Place**, ICRA - Tidy Up My Room Challenge, 2018

Extracurricular and Social Activities

Vice President, Graduate Student Union in School of Mechanical Engineering

Jun. 2018 — Jun. 2019

- Organizing educational and social events catering to 2500 students enrolled in the School of Mechanical Engineering.
- Communicating and collaborating with other student associates.

SKILLS

- **Programming:** Python, MATLAB, ROS, L^AT_EX, Linux, C++ (Basic), PDDL
- **Softwares:** Pybullet, Mujoco, IsaacGym, Crocoddyl, Pytorch, OpenCV, CasADi, CATIA, Solidworks, AutoCAD
- **Languages:** Chinese (Native), English (Fluent), French (Beginner)