Teng Xue

Research Assistant, École Polytechnique Fédérale de Lausanne (EPFL)/Idiap Research Institute
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RESEARCH INTERESTS

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

EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL) Nov. 2021 — Oct. 2025
Ph.D. in Electrical Engineering
Thesis Topic: Logic-Geometric Planning and Control for Robotics
Supervisor: 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. 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 Product Assembly
Supervisor: Prof. Peihuang Lou

EXPERIENCE

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

- Developing algorithms to combine logic 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

- 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, Top 5%**).
- **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

- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE Sensors Journal

AWARDS

- **Outstanding Winner (1/8085)**, The 2017 Mathematics Contest in Modeling held by American Consortium for Mathematics and Its Application (COMAP), 2017
- **First Prize**, The 6th national mathematics contest for college students, 2014
- **Chinese National Scholarship (Top 1%)**, 2014 and 2018
- **Tang Lixin Scholarship (Top 0.5%)**, 2018
- **Outstanding graduate student (Top 5%)**, Shanghai Jiao Tong University, 2020
- **First-class academic scholarship**, Shanghai Jiao Tong University, 2017-2020
- **Fist Place**, ICRA2018 - Tidy Up My Room Challenge, 2018
- **Third Prize**, Robomaster 2016 National Robotics Competition, 2016
- **Outstanding Volunteer**, Youth Olympic Games (International Olympic Committee), 2014

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, LaTeX, Linux, C++ (Basics), PDDL
- **Softwares:** Pybullet, Mujoco, IsaacGym, Crocoddyl, Pytorch, OpenCV, CasADi, CAD (CATIA, Solidworks, AutoCAD)
- **Languages:** English, Chinese (Native)