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, Optimal Control

EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL) Nov. 2021 — Oct. 2025
Ph.D. in Electrical Engineering
Thesis Topic: Hybrid Planning and Control for Robot Dexterous Manipulation
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
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

Learning-based Control of Roller Grasper V2 for In-hand Manipulation **Remote**
Intern, Stanford Artificial Intelligence laboratory (SAIL), Stanford University May. 2020 — Oct. 2020

- Developing an in-hand manipulation simulator for Roller Grasper and implementing control policy learning using model-free reinforcement learning techniques.
- Achieving universal policy learning through behavior cloning, enhancing the adaptability and efficiency of the control system.

Stable Robot Grasping Through Visual-Tactile Fusion and Deep Learning **Shanghai, China**
Research Assistant, Shanghai Jiao Tong University Oct. 2018 — May 2019

- Developing a framework for learning tactile prior knowledge to enhance grasping stability.
- Proposing a multi-step grasping strategy to generate stable grasping configurations given only a single RGB image.

Tidy Up My Room Challenge, ICRA 2018 **Brisbane, Australia**
Group Member, Supervisor: Prof. Weiming Wang, Prof. Cewu Lu Jan. 2018 — May 2018

- Developing an object detection framework based on Mask RCNN
- Winning 1st place in Static Manipulation Track

UAV Grasping System Design and Control **Shenzhen, China**
ResearchIntern, Shenzhen DJI Innovation and Technology Co., Ltd Jul. 2016 — Aug. 2016

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

COMAP's Mathematical Contest in Modeling **Nanjing, China**
Group leader, Supervisor: Prof. Quan Yuan Feb. 2017

- Creating a comprehensive 3D baseline cube model incorporating distinct indices such as the Economic Development Index (EDI), Social Justice Index (SJI), and Environment Performance Index (EPI) to assess urban development.
- Identifying key determinants impacting city budgets and formulating a strategic smart growth initiative.
- Winning the Outstanding Winner award (1/8085)

PUBLICATIONS

- **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)