YAN ZHANG

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RESEARCH INTERESTS

Robot Learning, Multi-Object Manipulation Planning, Integrated Task and Motion Planning, Graph Theory

EDUCATION

Ecole Polytechnique Fédérale de Lausanne (EPFL) *Lausanne, Switzerland*
Ph.D. Electrical Engineering *Oct. 2022-Oct. 2026*
Thesis: Towards Efficient and Robust Multi-object Manipulation Planning with Tools
Advisors: Dr. Sylvain Calinon

Xi'an Jiao Tong University (XJTU) *Xi'an, China*
M.Sc. Mechanical Engineering *Sept. 2019-June 2022*
Thesis: *Robot Learning Variable Impedance Manipulation Skills with Multi-Modal Demonstrations*
Advisors: Prof. Fei Zhao

Ecole Centrale de Lille (ECLille) *Lille, France*
M.Eng. General Engineering *Sept. 2017-Sept. 2022*
Double Master's Degree Program between XJTU and ECLille

Xi'an Jiao Tong University (XJTU) *Xi'an, China*
B.Eng. Mechanical Engineering *Aug. 2015-Sept. 2019*

PROFESSIONAL SKILLS

Theory:	Integrated Task and Motion Planning (TAMP), Variable Impedance Control (VIC) Imitation and Deep Reinforcement Learning (IL & DRL), Graph Theory
Languages:	Chinese-Native, English-IELTS-7.5, French-DALF-C1
Programming:	Python, C++, PDDL, MATLAB, Java
Software:	ROS, PyTorch, PyBullet, Genesis, SolidWorks
Others:	Linux, Latex, Git

RESEARCH EXPERIENCE

Idiap Research Institute *Martigny, Switzerland*
Research Assistant in Robot Learning and Interaction Group *Oct. 2022-Oct. 2026*
Research Project: *Integrating TAMP with robot learning for long-horizon manipulation tasks*
Role: contributor to two EU projects involving research on learning for long-horizon manipulation planning

1. Proposed an LfD approach for reactive TAMP to solve long-horizon manipulation tasks with disturbances.
2. Proposed an efficient hierarchical TAMP framework with graph neural network for multi-step kitchen activities.

Xi'an Jiao Tong University (XJTU) *Xi'an, China*
Research Assistant in Institute of Robotics and Intelligent Systems *July 2019-Aug. 2022*
Research Project: *Robot learning VIC policies from multi-modal demonstrations*
Role: main contributor to robot compliant manipulation skills learning and optimization

1. Developed an approach for learning VIC policies from human demonstrations using IL & DRL.
2. Validated the approach on the Franka Emika robot arm for pouring tasks using Python, C++, and ROS.

3. Assisted in developing an approach for learning VIC policies from demonstrations with sEMG signals.

Tencent Robotics X Lab *Shenzhen, China*
Research Internship in Intelligent Agent Center *Oct. 2021-Jan. 2022*
Research Project: *Robots learning to move like animals*
Role: main contributor to quadruped robot locomotion gaits Sim2Real transfer

1. Designed real-world experiments to test the accuracy of sensors of on a self-designed quadruped robot.
2. Investigated factors affecting the Sim2Real transfer of quadruped robot locomotion gaits and optimized the DRL approach to achieve robust transfer with a 100% success rate.

PUBLICATIONS

- [J1] **Zhang, Y.**, Xue, T.*, Razmjoo, A. *, Calinon, S. (2024). *Logic Learning from Demonstrations for Multi-step Manipulation Tasks in Dynamic Environments*. IEEE Robotics and Automation Letters (RAL). [PDF] [website]

- [C2] Li, Y., **Zhang, Y.**, Razmjoo, A., Calinon, S. (2024). *Representing Robot Geometry as Distance Fields: Applications to Whole-body Manipulation*. In Proc. IEEE Intl Conf. on Robotics and Automation. [PDF] [website]

- [C1] **Zhang, Y.**, Zhao, F., Liao Z. (2022). *Learning and Generalizing Variable Impedance Manipulation Skills from Human Demonstrations*. In Proc. IEEE/ASME Intl Conf. on Advanced Intelligent Mechatronics. [PDF]

PS: *authors with $*$ contributed equally*

AWARDS AND HONORS

- China Scholarship Council (CSC) Scholarship for Double Master's Degree (2/281) *Sept. 2017-July 2019*
- Special Prize, Academic Scholarship for Postgraduate Students at XJTU (top 10%) *2019-2021*
- Second Prize, China Postgraduate Robot Innovation and Design Competition *Dec. 2020*