

Puze LIU 刘普泽

Associate Professor at Tongji University

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Research interest: **Robotics, Reinforcement Learning, Robot Safety, Embodied AI.**

My research addresses the core challenges in developing high-speed reactive robot systems and tries to enable **high-speed robot motions in dynamic and stochastic environments** while adhering to safety and robustness requirements. I focus on establishing a systematic research terminology encompassing theory, algorithm, and system, with a particular emphasis on bridging the gap between **reinforcement learning theory** and its **deployment** on physical robots, aiming to create scalable and generalizable solutions for real-world applications.

EDUCATION

Dec. 2024 Aug. 2019	Ph.D. in Computer Science, TU DARMSTADT, Darmstadt, Germany > Ph.D. Thesis: Safe Reinforcement Learning for Robotics: From Exploration to Policy Learning > Supervisor: Prof. Jan Peters, Ph.D. (IEEE Fellow) Committee: Prof. Marco Pavone, Ph.D. (Stanford) > Grade: Summa Cum Laude (with Distinction, 1-5%) > Published 15 top-tier journal and conference papers in the field of robotics and machine learning, including IEEE T-RO, IJRR, TASE, RA-L, ICRA, IROS, CoRL, RSS, NeurIPS, AISTATS. > Highlights: CoRL 2021 Best Paper Award Finalist, IROS Best Entertainment and Amusement Paper Award Finalist, RSS 2025 Pioneers
Aug. 2018 Oct. 2015	M.Sc. in Computational Engineering Science, TU BERLIN, Berlin, Germany > Master Thesis: Simulation and Implementation of an industrial robot motion speed control depending on the distance between human and robot Thesis Supervisor: Dr.-Ing. Jörg Krüger > Study Emphases: Robotics, Automation Technology, Motion Planning and Control, Computer Vision
Jul. 2015 Sep. 2010	B.Sc. Engineering Mechanics, TONGJI UNIVERSITY, Shanghai, China > Bachelor Thesis: Design and Optimization of Composite Collision Protection Fender for the Bridge Thesis Supervisor: Prof. Dr. Mingxia Fang > Study Emphases: Optimization, Dynamics, Solid Mechanics, Continuum Mechanics, Computational Mechanics

RESEARCH AND TEACHING EXPERIENCE

Now Mar. 2026	Associate Professor, TONGJI UNIVERSITY, China > Research in Loco-Manipulation for Humanoids. > Research in Vision-Language-Action model for mobile manipulator. > Supervise Master/PhD Students.
Feb. 2026 Jan. 2025	Deputy Head, SAIROL, GERMAN RESEARCH CENTER FOR ARTIFICIAL INTELLIGENCE, Germany > Research in Safe Learning and Control Techniques for Robotic Systems in the Open World. > Leading a multidisciplinary research team with more than 10 people (Ph.D./Master's students and assistants) > Lab operation and management, including proposal preparation, project and equipment management, and public services. > Main organizer for IROS Workshop - LeaPRiDE: Learning, Planning, and Reasoning in Dynamic Environments
Dec. 2024 Jul. 2023	Researcher, SAIROL, GERMAN RESEARCH CENTER FOR ARTIFICIAL INTELLIGENCE, Germany > Research in Safe and Reliable Learning and Control Systems for Robotics. > Main organizer for the NeurIPS Competition: Robot Air Hockey Challenge in 2023. The competition has attracted more than 50 teams worldwide to participate, including MIT, CMU, and ETH.
Jun. 2023 Sep. 2019	Graduate Researcher Assistant, TU DARMSTADT, Germany > Interdisciplinary research in Machine Learning for Robotics, Reinforcement Learning, Control, Optimization, and Bayesian Optimization. > Supervised 7 Master Theses, 1 Bachelor Theses, and 13 Student Projects. Supervised students are pursuing PhD in top universities and institutes, such as Washington University, the University of Zurich, and MBZUAI. > Teaching assistant for the Bachelor's Course (over 500 participants) - Computational Engineering and Robotics. The major responsibility is to give exercise lectures, prepare exercises and exams, and answer questions.

HONORS AND AWARDS

2025	R:SS Pioneers (33 candidates worldwide)
2023	ICRA-RAS Travel Grants
2022	IROS Student Travel Award
2021	CoRL Best Paper Award Finalist (Top 1%)
2021	IROS Best Entertainment and Amusement Paper Award Finalist (Top 1%)
2019	Scholarship from China Scholarship Council
2012	China National Grants
2011	The Second Prize Scholarship from Tongji University

SKILLS AND LANGUAGES

Expert	Python, C/C++, ROS, ROS2, PyTorch, JAX, git, Mujoco, Latex
Advanced	Docker, HTML, CSS, Inkscape, KDenlive, Arduino, Linux, MacOS
Language	English (Fluent), Chinese (Mother Tongue), German (Advanced Intermediate)

REFERENCES

Prof. Jan Peters, Ph.D.

Full Professor

IAS, TU DARMSTADT

@ jan.peters@tu-darmstadt.de

Dr. Davide Tateo

Dependent Research Group Leader

IAS, TU DARMSTADT

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Prof. Dr. Georgia Chalvatzaki

Assistant Professor

IROSA, TU DARMSTADT

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Date: April 30, 2026

Journals

- 2026 Christopher E. Mower, Yuhui Wan, Hongzhan Yu, Antoine Grosnit, Jonas Gonzalez-Billandon, Matthieu Zimmer, **Puze Liu**, Daniel Palenicek, Davide Tateo, Jan Peters, Kaixian Qu, Mike Zhang, Guowei Lan, Andrei Cramariuc, Cesar Cadena, Marco Hutter, Guangjian Tian, Yuzhen Zhuang, Kun Shao, Xingyue Quan, Jianye Hao, Jun Wang, and Haitham Bou-Ammar. "A Robot Operating System Framework for Using Large Language Models in Embodied AI", *Nature Machine Intelligence (NMI)*.
- 2025 **Puze Liu**, Haitham Bou-Ammar, Jan Peters, and Davide Tateo. "Safe Reinforcement Learning on the Constraint Manifold: Theory and Applications", *IEEE Transactions on Robotics (T-RO)*.
- 2025 Junning Huang, Davide Tateo, **Puze Liu**, and Jan Peters. "Adaptive Control based Friction Estimation for Tracking Control of Robot Manipulators." *IEEE Robotics and Automation Letters (RA-L)*.
- 2024 Shangding Gu, **Puze Liu**, Alap Kshirsagar, Guang Chen, Jan Peters, and Alois Knoll.. "ROSCOM: Robust Safe Reinforcement Learning on Stochastic Constraint Manifolds", *IEEE Transactions on Automation Science and Engineering (TASE)*.
- 2023 Kicki, Piotr, **Puze Liu**, Davide Tateo, Haitham Bou-Ammar, Krzysztof Walas, Piotr Skrzypczyński, and Jan Peters. "Fast Kinodynamic Planning on the Constraint Manifold with Deep Neural Networks", *IEEE Transactions on Robotics (T-RO)*.
- 2023 Julen Urain; Anqi Li; **Puze Liu**; Carlo D'Eramo; Jan Peters. "Composable Energy Policies for Reactive Motion Generation and Reinforcement Learning", *International Journal of Robotics Research (IJRR)*.

Conferences

- 2026 Alessandro Montenegro, **Puze Liu**, Shihao Li, Alberto Maria Metelli, Jan Peters. "Mind Your Steps: A General Learning Framework for Accurate Humanoid Foothold Tracking", In *Proceedings of the Robotics: Science and Systems (RSS)*. **Corresponding Author**
- 2025 Zechu Li, Yufeng Jin, Daniel Ordonez Apraez, Claudio Semini, **Puze Liu**, and Georgia Chalvatzaki. "Morphologically Symmetric Reinforcement Learning for Ambidextrous Bimanual Manipulation", In *Proceedings of the Conference on Robot Learning (CoRL)*. **Corresponding Author**
- 2025 Bang You, **Puze Liu**, Huaping Liu, Jan Peters, Oleg Arenz. "Maximum Total Correlation Reinforcement Learning", In *Forty-second International Conference on Machine Learning (ICML)*.
- 2025 Julius Jankowski, Ante Marić, **Puze Liu**, Davide Tateo, Jan Peters, Sylvain Calinon. "Distilling Contact Planning for Fast Trajectory Optimization in Robot Air Hockey", In *Robotics: Science and Systems 2025 (RSS)*.
- 2025 Maximilian Tölle, Theo Gruner, Daniel Palenicek, Jonas Günster, **Puze Liu**, Joe Watson, Davide Tateo, Jan Peters. "Towards Safe Robot Foundation Models", In *1st German Robotics Conference*.
- 2024 **Puze Liu**, Jonas Günster, Niklas Funk, et al. "A Retrospective on the Robot Air Hockey Challenge: Benchmarking Robust, Reliable, and Safe Learning Techniques for Real-world Robotics", In *Proceedings of the Thirty-eight Conference on Neural Information Processing Systems Datasets and Benchmarks Track (NeurIPS)*.
- 2024 Jonas Günster, **Puze Liu**, Jan Peters, and Davide Tateo. "Handling Long-Term Safety and Uncertainty in Safe Reinforcement Learning", In *Proceedings of the Conference on Robot Learning (CoRL)*. **Corresponding Author**
- 2024 Kicki, Piotr, Davide Tateo, **Puze Liu**, Jonas Günster, Jan Peters, and Krzysztof Walas. "Bridging the gap between Learning-to-plan, Motion Primitives and Safe Reinforcement Learning", In *Proceedings of the Conference on Robot Learning (CoRL)*.
- 2023 **Puze Liu**, Kuo Zhang, Davide Tateo, Snehal Jauhri, Zhiyuan Hu, Jan Peters, and Georgia Chalvatzaki. "Safe Reinforcement Learning of Dynamic High-Dimensional Robotic Tasks: Navigation, Manipulation, Interaction", In *Proceedings of the 2023 IEEE International Conference on Robotics and Automation (ICRA)*.
- 2022 **Puze Liu**; Davide Tateo; Haitham Bou-Ammar; Jan Peters. "Robot Reinforcement Learning on the Constraint Manifold", In *Proceedings of the Conference on Robot Learning (CoRL)*. **Best Paper Award Finalists**
- 2022 **Puze Liu**; Kuo Zhang, Davide Tateo, Snehal Jauhri, Jan Peters, Georgia Chalvatzaki. "Regularized Deep Signed Distance Fields for Reactive Motion Generation", In *Proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.
- 2022 Marius Memmel; **Puze Liu**; Davide Tateo; Jan Peters. "Dimensionality Reduction and Prioritized Exploration for Policy Search", In *25th International Conference on Artificial Intelligence and Statistics (AISTATS 2022)*. **Corresponding Author**
- 2021 **Puze Liu**; Davide Tateo; Haitham Bou-Ammar; Jan Peters. "Efficient and Reactive Planning for High Speed Robot Air Hockey", In *Proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. **Best Entertainment and Amusement Paper Award Finalists**
- 2021 Julen Urain; Anqi Li; **Puze Liu**; Carlo D'Eramo; Jan Peters. "Composable Energy Policies for Reactive Motion Generation and Reinforcement Learning", In *Robotics: Science and Systems 2021 (RSS)*