Jin Cheng

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EDUCATION

ETH Zürich, Zürich, Switzerland   since 10/2023
Doctoral student in Computer Science advised by Prof. Dr. Stelian Coros

ETH Zürich, Zürich, Switzerland   09/2020 − 07/2023
MSc in Mechanical Engineering   *GPA: 5.80 / 6.0*

Tsinghua University, Beijing, China   09/2016 − 07/2020
BSc in Vehicle Engineering   *GPA: 3.81 / 4.0*

RESEARCH EXPERIENCE

Scientific Assistant   since 10/2023
Computational Robotics Lab at ETH Zürich, supervised by Prof. Dr. Stelian Coros
- Loco-manipulation with reinforcement learning on quadruped robots.

Research Intern   04/2023 - 09/2023
Autonomous Learning Group at Max Planck Institute for Intelligent Systems, supervised by Prof. Dr. Georg Martius
- Reinforcement learning with unsupervised skill discovery for quadruped robots.

Research Assistant   11/2022 - 03/2023
Computational Robotics Lab at ETH Zürich, supervised by Dongho Kang, Prof. Dr. Stelian Coros
- Learning-based locomotion control on quadruped robots by imitating model-based controller.

Master Thesis   03/2022 - 11/2022
Robotic Systems Lab at ETH Zürich, supervised by Nikita Rudin, Fabian Jenelten, Prof. Dr. Marco Hutter
- Imitating MPC with reinforcement learning for terrain-adaptive locomotion on quadruped robots.

Semester Project   09/2021 - 03/2022
Robotic Systems Lab at ETH Zürich, supervised by Dr. Farbod Farshidian, Prof. Dr. Marco Hutter
- Haptic teleoperation using feedback MPC on high-dimensional mobile manipulator.

PUBLICATIONS

Offline Diversity Maximization Under Imitation Constraints (RLC 2024)
Marin Vlastelica, Jin Cheng, Georg Martius, Pavel Kolev   05/2024
- An offline skill discovery algorithm by maximizing a mutual information objective constrained by a KL-divergence.

Learning Diverse Skills for Local Navigation under Multi-constraint Optimality (ICRA 2024)
Jin Cheng, Marin Vlastelica, Pavel Kolev, Chenhao Li, Georg Martius   02/2024
- A novel framework from a constrained optimization viewpoint on the quality-diversity trade-off.
  We show that we can obtain diverse policies while imposing multiple constraints on the reward terms.

RL + Model-based Control:
Using On-demand Optimal Control to Learn Versatile Legged Locomotion (RA-L)
Dongho Kang, Jin Cheng, Miguel Zamora, Fatemeh Zargarbashi, Stelian Coros   09/2023
- A versatile control method for dynamic and robust legged locomotion that integrates model-based optimal control
  with reinforcement learning through motion imitation and generating reference on demand during training.

Haptic Teleoperation of High-dimensional Robotic Systems
Using a Feedback MPC Framework (IROS 2022)
Jin Cheng, Firas Abi-Farraj, Farbod Farshidian, Marco Hutter   10/2022
- A novel framework for transparent teleoperation of MPC-controlled complex robotic systems by employing a
  feedback MPC approach and exploiting its structure to account for the operator input at a fast rate.

Teaching Experience

Introduction to Machine Learning (252-0220-00)	02/2024 - 08/2024
Learning & Adaptive Systems Group at ETH Zürich, lectured by F. Perez Cruz, F. Yang	
Dynamic Programming and Optimal Control (151-0563-01)	08/2022 - 02/2023
Institute for Dynamic Systems and Control at ETH Zürich, lectured by R. D'Andrea	
Recursive Estimation (151-0566-00)	02/2022 - 08/2022
Institute for Dynamic Systems and Control at ETH Zürich, lectured by R. D'Andrea	
Dynamic Programming and Optimal Control (151-0563-01)	08/2021 - 02/2022
Institute for Dynamic Systems and Control at ETH Zürich, lectured by R. D'Andrea	

Skills

Language: Chinese (Native), English (C1), German (B2)
Programming: Python, C++, MATLAB, Git, Docker, LaTeX, PyTorch, ROS (Robot Operating System)

Services

Reviewer: IEEE IROS, IEEE ICRA, IEEE RA-L, ACM SIGGRAPH

Scholarships and Awards

Outstanding Teaching Assistant Award	03/2022
ETH Zürich	*Zürich, Switzerland*
Friends of Tsinghua Scholarship – German Scholarship	10/2019
Tsinghua University	*Beijing, China*
Academic Excellence Scholarship	10/2018, 10/2019
Tsinghua University	*Beijing, China*
Volunteer Public Service Scholarship	10/2018
Tsinghua University	*Beijing, China*
Integrated Excellence Scholarship	10/2017
Tsinghua University	*Beijing, China*

27.05.2024