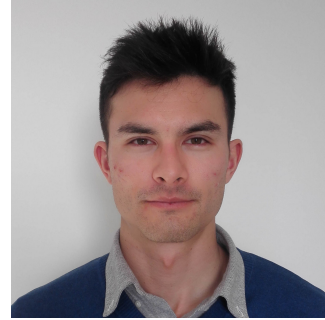


Kai Pfeiffer

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Born: April 12, 1990—Cologne, Germany
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Experience

- 2024 - now *Assistant professor*, Department of Mechatronics & Robotics, School of Advanced Technology, Xi'an Jiaotong Liverpool University, Suzhou, China
- 2022 - 2024 *Postdoctoral researcher*, Control Robotics Intelligence Group, School of Mechanical & Aerospace Engineering, NTU, Singapore
- 2021 *Adjunct Professor*, 'Networked Robotics Systems, Cooperative Control and Swarming' (ROB-GY 6333-A), Tandon School of Engineering, New York University, New York, USA
- 2020 - 2022 *Postdoctoral researcher*, Machines in Motion Laboratory, Tandon School of Engineering, New York University, New York, USA
- 2019 - 2020 *Postdoctoral researcher*, LIRMM, University of Montpellier, Montpellier, France

Areas of specialisation

Optimal control for fully-actuated and under-actuated robots, task planning, numerical optimization, hierarchical non-linear programming

Education

- 2019 PhD in Robotics, University of Montpellier, France and AIST/CNRS Joint Robotics Laboratory (JRL), Tsukuba, Japan; supported in part by the CNRS-AIST-AIRBUS Joint Research Program, and the EU H2020 COMANOID project
- 2016 MSc in Mechanical Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany
- 2013 BSc in Mechanical Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany

Publications (h-index: 6)

JOURNAL ARTICLES

- 2024 K. Pfeiffer and A. Kheddar, "Sequential Hierarchical Least-Squares Programming for Prioritized Non-Linear Optimal Control", *Optimization Methods and Software*.
- 2023 K. Pfeiffer, A. Escande, L. Righetti, "NIPM-HLSP: An Efficient Interior-Point Method for Hierarchical Least-Squares Programs", *Optimization and Engineering*.
- 2023 K. Pfeiffer, A. Escande, P. Gergondet and A. Kheddar, "The hierarchical Newton's method for numerically stable prioritized dynamic control", *Transactions on Control Systems Technology*.
- 2022 Mingsheng Yin, Akshaj Kumar Veldanda, Ameer Trivedi, Jeff Zhang, Kai Pfeiffer, Yaqi Hu, Siddharth Garg, Elza Erkip, Ludovic Righetti, Sundeep Rangan, "Millimeter wave wireless assisted robot navigation with link state classification", *IEEE Open Journal of the Communications Society*.
- 2018 K. Pfeiffer, A. Escande and A. Kheddar, "Singularity Resolution in Equality and Inequality Constrained Hierarchical Task-Space Control by Adaptive Nonlinear Least Squares", *IEEE Robotics*

and Automation Letters, presented at IROS 2018.

- 2018 Vincent Bonnet, Kai Pfeiffer, Philippe Fraisse, André Crosnier, Gentiane Venture, “Self-Generation of Optimal Exciting Motions for Identification of a Humanoid Robot”, International Journal of Humanoid Robotics.

INTERNATIONAL CONFERENCES

- 2023 Kai Pfeiffer, Quang-Cuong Pham, “Time-Optimal Control via Heaviside Step-Function Approximation”, IROS 2023.
- 2023 Kai Pfeiffer, Leonardo Edgar, Quang-Cuong Pham, “Monte-Carlo Tree Search with Prioritized Node Expansion for Multi-Goal Task Planning”, IROS 2023.
- 2022 Kai Pfeiffer, Yuze Jia, Mingsheng Yin et al., “Path Planning Under Uncertainty to Localize mmWave Sources”, ICRA 2023.
- 2020 Huaijiang Zhu, Manali Sharma, Kai Pfeiffer, Ludovic Righetti et al., “Enabling Remote Whole-body Control with 5G Edge Computing”, IROS 2020.
- 2017 K. Pfeiffer, A. Escande and A. Kheddar, “Nut fastening with a humanoid robot”, IROS 2017.

ARTICLES (NON-REFEREED)

- 2024 K. Pfeiffer, “Sparse Hierarchical Non-Linear Programming for Inverse Kinematic Planning and Control with Autonomous Goal Selection”.
- 2024 K. Pfeiffer and A. Kheddar, “Efficient Lexicographic Optimization for Robot Control and Planning”.
- 2021 K. Pfeiffer, L. Righetti, “ $\mathcal{N}$ IPM-MPC: An Efficient Null-Space Method Based Interior-Point Method for Model Predictive Control”.

Service to the profession

- Associate editor for international conferences: ‘International Conference on Intelligent Robots and Systems’ 2023, 2024 and 2025.
- Regular reviewer for international journals and conferences: ‘Transactions on Robotics’, ‘Transactions on Industrial Informatics’, ‘Robotics and Automation Letters’, ‘International Conference on Robotics and Automation’, ‘International Conference on Intelligent Robots and Systems’, ‘Robotics Science and Systems’ and ‘International Conference on Humanoid Robots’.
- Member of organizing committee of workshop “From human motion understanding to humanoid locomotion” (ICRA 2024).