

# Liding Zhang, Ph.D.candidate (Dr.rer.nat)

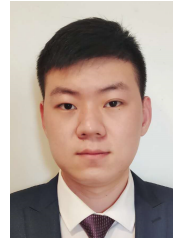
✉ lidingzhangbruce@foxmail.com

🏠 scholar.google.com

🌐 linkedin

🌐 ce.cit.tum.de/air/people/liding-zhang-msc

🐙 github.com/liding-zhang



## Employment History

- 2022 – . . . . .
- 📌 **Research Assistant**  
Chair of Robotics, Artificial Intelligence and Real-Time Systems, TUM School of Computation, Information and Technology (CIT), Technical University of Munich (TUM).
  - 📌 **Scientific Researcher**  
TUM School of Munich Institute of Robotics and Machine Intelligence (MIRMI), Technical University of Munich (TUM).
  - 📌 **Project Associate**  
Bavarian State Ministry for Economic Affairs, Regional Development and Energy (StMWi) for the Lighthouse Initiative KI.FABRIK (AI.Factory), (Grant no. DIK0249).
  - 📌 **Project Associate**  
Federal Ministry of Education and Research of Germany (BMBF) in the programme of “Souverän. Digital. Vernetzt.” Joint project 6G-life, (Grant no. 16KISK002).
- 2021 – 2022
- 📌 **Project Associate**  
Bicycle ergometer in the laboratory for biomechanics project, Institute of Mechanical Engineering, Technical University of Clausthal.
- 2019 – 2020
- 📌 **Assistant Mechanical Engineer**  
Noise, vibration, and harshness (NVH) group of Volkswagen Automatic Transmission (Tianjin) Co. Ltd. · Full-time.
- 2016 – 2017
- 📌 **Mechanical Engineer Intern**  
Industrial Manufacturing group of Kisters-Stiftung gemeinnützige GmbH · Part-time.






## Education

- 2022 – . . . . .
- 📌 **Ph.D., Technical University of Munich (DE) - Computer Science - Robotics.**  
Thesis title (temp.): *Sampling-based Almost-surely Asymptotic Optimal Motion Planning for Heterogeneous Robot Manipulation in Constrained Configuration Spaces.*
- 2020 – 2022
- 📌 **M.Sc., Technical University of Clausthal (DE) - Automation Technology.**  
Thesis title: *Vibration Measurement in the Gigahertz Range at Frequencies Exceeding the Bandwidth of Photodetectors in the Visible Frequency Range (about >2.5 GHz).*
- 2016 – 2020
- 📌 **B.Sc., Rhine-Waal University of Applied Science (DE) - Mechanical Engineering.**  
Thesis title: *Comprehensive Analytic and Numerical Inverse Dynamics Approaches to the Classic Sliding-Rod Problem.*




## Selected Research Publications (\*Equal Contribution)

### Journal Articles

- 1 K. Cai\*, **L. Zhang\***, X. Su, K. Chen, C. Wang, S. Haddadin, A. Knoll, A. Ajoudani, and L. Figueredo, “Just in time informed trees: Manipulability-aware asymptotically optimized motion planning,” *IEEE/ASME Transactions on Mechatronics (T-Mech)*, pp. 1–12, 2025, [JCR Q1, IF: 7.3]. 📄 DOI: 10.1109/TMECH.2025.3570573.

- 2 **L. Zhang**, K. Cai, Z. Bing, C. Wang, and A. Knoll, "Genetic informed trees (GIT\*): Path planning via reinforced genetic programming heuristics," *Biomimetic Intelligence and Robotics*, vol. 5, no. 3, p. 100 237, 2025, [JCR Q1, IF: 5.5], ISSN: 2667-3797.  DOI: 10.1016/j.birob.2025.100237.
- 3 **L. Zhang**, K. Cai, Z. Sun, Z. Bing, C. Wang, L. Figueredo, S. Haddadin, and A. Knoll, "Motion planning for robotics: A review for sampling-based planners," *Biomimetic Intelligence and Robotics*, vol. 5, no. 1, p. 100 207, 2025, [JCR Q1, IF: 5.5], ISSN: 2667-3797.  DOI: 10.1016/j.birob.2024.100207.
- 4 **L. Zhang**, K. Cai, Y. Zhang, Z. Bing, C. Wang, F. Wu, S. Haddadin, and A. Knoll, "Estimated informed anytime search for sampling-based planning via adaptive sampler," *IEEE Transactions on Automation Science and Engineering (T-ASE)*, vol. 22, pp. 18 580–18 593, 2025, [JCR Q1, IF: 6.4].  DOI: 10.1109/TASE.2025.3590084.
- 5 **L. Zhang**, Y. Ling, Z. Bing, F. Wu, S. Haddadin, and A. Knoll, "Tree-based grafting approach for bidirectional motion planning with local subsets optimization," *IEEE Robotics and Automation Letters (RA-L)*, vol. 10, no. 6, pp. 5815–5822, 2025, [JCR Q1, IF: 5.3].  DOI: 10.1109/LRA.2025.3562369.
- 6 **L. Zhang**, S. Wang, K. Cai, Z. Bing, F. Wu, C. Wang, S. Haddadin, and A. Knoll, "APT\*: Asymptotically optimal motion planning via adaptively prolated elliptical r-nearest neighbors," *IEEE Robotics and Automation Letters (RA-L)*, vol. 10, no. 10, pp. 10 242–10 249, 2025, [JCR Q1, IF: 5.3].  DOI: 10.1109/LRA.2025.3598616.

## Conference Proceedings

- 1 **L. Zhang**, K. Chen, K. Cai, Y. Zhang, Y. Dang, Y. Wu, Z. Bing, F. Wu, S. Haddadin, and A. Knoll, "Direction informed trees (DIT\*): Optimal path planning via direction filter and direction cost heuristic," in *2025 IEEE International Conference on Robotics and Automation (ICRA) Accepted*, 2025.
- 2 **L. Zhang**, Z. Li, K. Cai, Z. Bing, and A. Knoll, "Language-exclusive mobile manipulation for efficient object search in indoor environments," in *2025 IEEE International Conference on Cyborg and Bionic Systems (CBS) Accepted*, 2025.
- 3 **L. Zhang**, S. Wang, K. Cai, Z. Bing, and A. Knoll, "Multi-sets trees (MST\*): Accelerated asymptotically optimal motion planning optimization informed by multiple domain subsets," in *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Accepted*, 2025.
- 4 **L. Zhang**, Y. Wei, K. Cai, Z. Bing, Y. Meng, F. Wu, S. Haddadin, and A. Knoll, "CIT\*: Context-based biased batch-sampling for almost-surely asymptotically optimal motion planning," in *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Accepted*, 2025.
- 5 **L. Zhang**, Q. Zong, Y. Zhang, Z. Bing, and A. Knoll, "Deep fuzzy optimization for batch-size and nearest neighbors in optimal robot motion planning," in *2025 IEEE International Conference on Cyborg and Bionic Systems (CBS) Accepted*, 2025.
- 6 M. Schewe\*, **L. Zhang\***, and C. Rembe, "Signal processing scheme for broadband heterodyne gigahertz interferometry with a broadband and a second low-noise photodetector with limited bandwidth," in *Journal of Physics: Conference Series*, 15th International AIVELA Conference on Vibration Measurements by Laser and Noncontact Techniques, 21-23 June 2023, Ancona, Italy, vol. 2698, 2024, p. 012 012.  DOI: 10.1088/1742-6596/2698/1/012012.
- 7 **L. Zhang**, Z. Bing, K. Chen, L. Chen, K. Cai, Y. Zhang, F. Wu, P. Krumbholz, Z. Yuan, S. Haddadin, and A. Knoll, "Flexible informed trees (FIT\*): Adaptive batch-size approach in informed sampling-based path planning," in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024, pp. 3146–3152.  DOI: 10.1109/IROS58592.2024.10802466.
- 8 **L. Zhang**, Z. Bing, Y. Zhang, K. Cai, L. Chen, F. Wu, S. Haddadin, and A. Knoll, "Elliptical k-nearest neighbors - path optimization via coulomb's law and invalid vertices in c-space obstacles," in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024, pp. 12 032–12 039.  DOI: 10.1109/IROS58592.2024.10802280.

## Skills

Languages	Proficient in reading, writing, and speaking English, Chinese (native), and German.
Coding	C++, C, Python, MATLAB/Simulink, JSON, XML, URDF, XACRO, $\LaTeX$ , Arduino ...
Drafting	Solidworks, AutoCAD, Catia, ANSYS, PLC (Ladder/Functional block diagrams) ...
Robot Dev.	ROS1/ROS2, Git, Linux, DOCKER, Moveit!, CoppeliaSim, Gazebo, Mujoco, OMPL ...
Misc.	Academic research, teaching, training, consultation, $\LaTeX$ typesetting, and publishing.

## Miscellaneous Experience

### Awards and Achievements

- 2025 **Editor's Choice (Biomimetic Intelligence and Robotics) [JCR Q1, IF: 5.5]**,  
The top selected papers from the Survey on Robotic Motion Planning in the Issue 1, 2025.
- 2023 **China Scholarship Council (CSC)**,  
Full-Scholarship funded by the Ministry of Education of the People's Republic of China.
- 2022 **Department Prize of Applied Metrology**,  
Recommendation letter from Prof. Dr.-Ing Christian Rembe (Chairman of the German University Lecturers), Institute of Electrical Information Technology, Technical University of Clausthal.
- Department Prize for Outstanding Student Performance**,  
Recommendation letter from Dr.-Ing. Marvin Schewe (Postdoctoral researcher at NIST, USA), Institute of Electrical Information Technology, Technical University of Clausthal.
- 2019 **Department Prize of Noise, Vibration, and Harshness (NVH)**.  
Recommendation letter from Mr. Vollrath Andreas (Head of quality assurance) and Mrs. Stefanie Wangemann (Head of org. & education), Volkswagen Automatic Transmission (Tianjin) Co. Ltd.

### Certification

- 2022 **Certified Deutsch (German) C1/2 (highest-level)**,  
Awarded by Dr. Jörg Schröder (Stellv. Leiter des Sprachenzentrums), Stufe nach Gemeinsamen Europäischem, Technical University of Clausthal.
- 2010 **1st Prize of National Trumpet Junior Group**,  
Awarded by China Musical Instruments Association (Western Musical Instruments), China.
- 2009 **Certified Profession Level 9 in Trumpet**.  
Awarded by Wuhan Conservatory Of Music Association, China.

## Service

- Reviewer: IEEE International Conference on Robotics and Automation (ICRA),  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),  
IEEE-RAS International Conference on Humanoid Robots (Humanoids),  
IEEE International Conference on Cyborg and Bionic Systems (CBS),  
IEEE Robotics and Automation Letters (RA-L),  
IEEE Transactions on Automation Science and Engineering (T-ASE),  
IEEE/ASME Transactions on Mechatronics (T-Mech),  
IEEE Transactions on Neural Networks and Learning Systems (TNNLS),  
Biomimetic Intelligence and Robotics.
- Chair: 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),  
Teaser Session of Robot Motion Planning IV, ADNEC in Abu Dhabi, UAE.