

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



Scholar Affiliation

Technical University of Munich (TUM) - Computer Science - Robotics.

Chair of Robotics, Artificial Intelligence and Real-time Systems,

TUM School of Computation, Information and Technology (CIT), Technical University of Munich,
85748 Garching bei Munich, Germany.

Publication List (*Equal Contribution)

Journal Articles

- 1 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.
- 2 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.
- 3 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.
- 4 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.
- 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.
- 7 Y. Zhang, J. Zhai, L. Zhang, J. Gong, Z. Bing, W. He, F. Sun, and A. Knoll, "Real-time data-driven safety-critical control in unknown multi-obstacle environments," *IEEE Transactions on Robotics (T-RO) under review*, 2025, [JCR Q1, IF: 10.5].

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)*, 2025, pp. 1766–1772. doi: 10.1109/ICRA55743.2025.11127725.

- 2 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)*, 2025, pp. 4421–4428. DOI: 10.1109/IROS60139.2025.11246858.
- 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)*, 2025, pp. 11 389–11 396. DOI: 10.1109/IROS60139.2025.11246371.
- 4 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.
- 5 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.
- 6 L. Zhang, Z. Li, K. Cai, Q. Huang, Z. Bing, and A. Knoll, "Language-enhanced mobile manipulation for efficient object search in indoor environments," in *2025 IEEE International Conference on Cyborg and Bionic Systems (CBS)*, 2025, pp. 425–430. DOI: 10.1109/CBS65871.2025.11267741.
- 7 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)*, 2025, pp. 419–424. DOI: 10.1109/CBS65871.2025.11267553.
- 8 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.
- 9 Y. Dang, Q. Xu, Y. Zhang, X. Yao, L. Zhang, F. Roehrbein, and A. Knoll, "Whisker-based active tactile perception for contour reconstruction," in *2025 IEEE International Conference on Robotics and Automation (ICRA)*, 2025, pp. 4695–4701. DOI: 10.1109/ICRA55743.2025.11128114.
- 10 J. Dong, L. Zhang, L. Zhang, Y. Ling, Y. Fu, K. Bai, Z.-C. Márton, Z. Bing, Z. Chen, A. C. Knoll, and J. Zhang, "M4diffuser: Multi-view diffusion policy with manipulability-aware control for robust mobile manipulation," in *2026 IEEE International Conference on Robotics and Automation (ICRA) Under review*, 2025. URL: <https://arxiv.org/abs/2509.14980>.
- 11 Y. Meng, X. Yao, K. Chen, Y. Wu, L. Zhang, Z. Bing, and A. Knoll, "Pretrained bayesian non-parametric knowledge prior in robotic long-horizon reinforcement learning," in *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Under review*, 2025.
- 12 Y. Wu, Z. Chen, F. Wu, L. Chen, L. Zhang, Z. Bing, A. Swikir, A. Knoll, and S. Haddadin, "Tacdiffusion: Force-domain diffusion policy for precise tactile manipulation," in *2025 IEEE International Conference on Robotics and Automation (ICRA)*, 2025, pp. 11 831–11 837. DOI: 10.1109/ICRA55743.2025.11127334.
- 13 Y. Zhang, L. Wen, L. Hong, L. Zhang, Q. Guo, S. Li, and A. Knoll, "Safety-critical control with saliency detection for mobile robots in dynamic multi-obstacle environments," in *2025 IEEE International Conference on Robotics and Automation (ICRA)*, 2025, pp. 7756–7762. DOI: 10.1109/ICRA55743.2025.11128721.
- 14 Y. Zhang, L. Zhang, W. Zhu, L. Wen, Y. Dang, Z. Bing, and A. Knoll, "A unified framework for safety and stability of nonlinear input-affine systems under robust model predictive control," in *2025 IEEE*

International Conference on Cyborg and Bionic Systems (CBS), 2025, pp. 431–437.  DOI: 10.1109/CBS65871.2025.11267606.

- 15 K. Cai, R. Laha, Y. Gong, L. Chen, **L. Zhang**, L. F. Figueredo, and S. Haddadin, “Demonstration to adaptation: A user-guided framework for sequential and real-time planning,” in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024, pp. 9871–9878.  DOI: 10.1109/IROS58592.2024.10802661.
- 16 K. Chen, Z. Bing, Y. Wu, F. Wu, **L. Zhang**, S. Haddadin, and A. Knoll, “Real-time contact state estimation in shape control of deformable linear objects under small environmental constraints,” in *2024 IEEE International Conference on Robotics and Automation (ICRA)*, 2024, pp. 13 833–13 839.  DOI: 10.1109/ICRA57147.2024.10611558.
- 17 L. Chen, H. Yu, **L. Zhang**, A. Naceri, A. Swikir, and S. Haddadin, “Trajectory planning for non-prehensile object transportation,” in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024, pp. 9939–9946.  DOI: 10.1109/IROS58592.2024.10801587.
- 18 Y. Zhang, G. Tian, L. Wen, X. Yao, **L. Zhang**, Z. Bing, W. He, and A. Knoll, “Online efficient safety-critical control for mobile robots in unknown dynamic multi-obstacle environments,” in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024, pp. 12 370–12 377.  DOI: 10.1109/IROS58592.2024.10802727.
- 19 J. Zhao, B. Vogel-Heuser, J. Ao, Y. Wu, **L. Zhang**, F. Hartl, D. Hujo, Z. Bing, F. Wu, A. Knoll, S. Haddadin, B. Vojanec, T. Markert, and A. Kraft, “Ontology based ai planning and scheduling for robotic assembly,” in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024, pp. 9855–9862.  DOI: 10.1109/IROS58592.2024.10802295.