ZHANG Bin, Ph.D. Candidate

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Homepage

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Education

- **Ph.D. Student, The Hong Kong Polytechnic University** in Mechanical Engi-Sep. 2021 – Now neering. Visiting Ph.D. Student, KTH Royal Institute of Technology. Mar. 2024 – Jul. 2024 Sep. 2017 – Jul. 2020 **M.Sc., China Academy of Space Technology** in Control Science and Engineering.
- **B.Eng.**, Beihang University in Detection, Guidance, and Control Technology. Sep. 2013 – Jul. 2017

Employment History

Research Assistant at ROMI Lab, The Hong Kong Polytechnic University. May 2021 – Aug. 2021

Research Interests

- Multi-agent formation control.
- Multi-robot manipulation.
- Control theory and applications.

Research Publications

* Equal contribution

Journal Articles

X. Shao*, **B. Zhang***, H. Zhi, *et al.*, "Inptc: Integrated planning and tube-following control for prescribed-time collision-free navigation of wheeled mobile robots," IEEE/ASME Transactions on Mechatronics, 2024, (Early Access). & DOI: 10.1109/TMECH. 2024. 3486727. & URL: https://vimeo.com/895801720.

Y. Tian, B. Zhang, X. Shao, and D. Navarro-Alarcon, "Encircling general 2-d boundaries by mobile robots with collision avoidance: A vector field guided approach," IEEE/ASME Transactions on Mechatronics, 2024, (Under Review). *O* DOI: arXiv: 2501.02242.

B. Zhang, H. Zhi, J. G. Romero, and D. Navarro-Alarcon, "Leader-follower formation control of perturbed nonholonomic agents along parametric curves with directed communication," IEEE Robotics and Automation Letters, vol. 9, no. 10, pp. 8603–8610, Aug. 2024. 30 DOI: 10.1109/LRA.2024.3445657. 𝚱 URL: https://vimeo.com/872927697.

H. Zhi, **B. Zhang**, J. Qi, et al., "Non-prehensile object transport by nonholonomic robots connected by linear deformable elements," IEEE Robotics and Automation Letters, vol. 9, no. 10, pp. 8651-8658, Aug. 2024. *O* DOI: 10.1109/LRA.2024.3440096.

H. Y. Lee, P. Zhou, B. Zhang, et al., "A distributed dynamic framework to allocate collaborative tasks 5 based on capability matching in heterogeneous multi-robot systems," IEEE Transactions on Cognitive and Developmental Systems, vol. 16, no. 1, pp. 251–265, Feb. 2023. 30 DOI: 10.1109/TCDS.2023.3264034.

W. Ma, **B. Zhang**, L. Han, S. Huo, H. Wang, and D. Navarro-Alarcon, "Action planning for packing long linear elastic objects into compact boxes with bimanual robotic manipulation," *IEEE/ASME Transactions on Mechatronics*, vol. 28, no. 3, pp. 1718–1729, Jun. 2023. *P* DOI: 10.1109/TMECH.2022.3223990.

M. Muddassir, G. Limbert, **B. Zhang**, A. Duan, J.-J. Tan, and D. Navarro-Alarcon, "Model predictive thermal dose control of a robotic laser system to automate skin photorejuvenation," *IEEE/ASME Transactions on Mechatronics*, vol. 28, no. 2, pp. 737–747, Apr. 2023. *O* DOI: 10.1109/TMECH.2022.3218806.

B. Zhang, H. Zhi, J. G. Romero, *et al.*, "Fourier-based multi-agent formation control to track evolving closed boundaries," *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 70, no. 11, pp. 4549–4559, Nov. 2023. **9** DOI: 10.1109/TCSI.2023.3300772. **9** URL: https://vimeo.com/809466573.

S. Huo, **B. Zhang**, M. Muddassir, D. T. W. Chik, and D. Navarro-Alarcon, "A sensor-based robotic line scan system with adaptive roi for inspection of defects over convex free-form specular surfaces," *IEEE Sensors Journal*, vol. 22, no. 3, pp. 2782–2792, Feb. 2022. *O* DOI: 10.1109/JSEN.2021.3132428.

J. Zhou, J. Hu, Y. Bai, and **B. Zhang**, "Optimal impulsive time-fixed transfers around the libration points of the restricted three-body problem," *Astrophysics and Space Science*, vol. 365, pp. 1–18, May 2020. *O* DOI: 10.1007/s10509-020-03793-7.

J. Zhou, J. Hu, and **B. Zhang**, "Analytical solutions for relative motion in the cicular restricted three-body problem," *Journal of Astronautics*, vol. 41, no. 2, Feb. 2020, (in Chinese). *O* DOI: 10.3873/j.issn.1000-1328.2020.02.004.

J. Zhou, J. Hu, and **B. Zhang**, "Approximate analytical solutions of motion near the collinear libration-points in restricted three-body problem," *Journal of Deep Space Exploration*, vol. 7, no. 1, Feb. 2020, (in Chinese). **9** DOI: 10.15982/j.issn.2095-7777.2020.20190408001.

B. Zhang and J. Zhou, "Characteristic model-based station-keeping control for halo orbit," *Acta Aeronautica et Astronautica Sinica*, vol. 40, no. 11, Nov. 2019, (in Chinese). *O* DOI: 10.7527/S1000-6893.2019.23306.

Conference Proceedings

- A. Duan, **B. Zhang**, L. Hu, L. Feng, and D. Navarro-Alarcon, "Balancing control of wheeled-legged hexapedal robots for traversing rough terrains," in *2022 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, Dec. 2022, pp. 1905–1910. *9* DOI: 10.1109/ROBI055434.2022.10011895.
- **B. Zhang**, C. Li, and J. Zhou, "Station-keeping of halo orbits using convex optimization-based receding horizon control," in *2021 China Automation Congress (CAC)*, Oct. 2021, pp. 7160–7165. *P* DOI: 10.1109/CAC53003.2021.9728345.
- **B. Zhang** and J. Zhou, "Characteristic model-based station-keeping control for halo orbits about sun-earth 11 point," in *2019 Chinese Automation Congress (CAC)*, Nov. 2019, pp. 418–423. *O* DOI: 10.1109/CAC48633.2019.8997351.

Skills

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Languages Coding Others

- English, Chinese (mother tongue).
- ROS, Linux, Webots, Arduino, SolidWorks.

Miscellaneous Experience

Awards and Achievements

- 2017 **Outstanding Graduate of Beihang University.**
- 2015 📕 National Inspirational Scholarship.
- 2014 📕 National Inspirational Scholarship.

Academic Services

- 2021 **Reviewer**. ICRA 2022.
- 2023 **Reviewer**. ICRA 2024.
 - **Reviewer**. IEEE Control Systems Letters.
- 2024 **Reviewer**. Journal of Field Robotics.
 - **Reviewer**. IEEE Robotics and Automation Magazine.
 - **Reviewer**. IEEE Transactions on Control of Network Systems.
 - **Reviewer**. CASE 2024.
 - **Reviewer**. ICRA 2025.
 - **Reviewer**. Aerospace Science and Technology.
 - **Reviewer**. IEEE Transactions on Robotics.

Teaching Experience

2025

- 2021 Teaching Assistant, Perceptual Robotics.
 2022 Teaching Assistant, Linear Systems and Control.
 Teaching Assistant, Advanced Control Technology.
- **Teaching Assistant**, Linear Systems and Control.