Baozhe Zhang

baozhezhang@link.cuhk.edu.cn · (+86) 18369940578 · zhangbaozhe

Research Interests

- **Real-time Robotics Algorithms**: Developing algorithms in C++ and Python for execution on edge computational platforms such as Nvidia Orin NX, focusing on real-time efficiency with limited resources.
- **Multi-robot System Collaboration and Intelligence**: Designing protocols for multi-robot systems to achieve cooperative tasks in logistics and manipulation with an emphasis on synchronization and shared objectives.
- **Robot Motion Planning**: Advancing motion planning techniques for precise navigation and task execution in cluttered environments, utilizing principles of optimization and learning for movement efficiency.
- **Reinforcement Learning for Robotics**: Implementing reinforcement learning systems to enhance robots' adaptive capabilities for improved autonomy in diverse operational scenarios.

Education

The Chinese University of Hong Kong, Shenzhen, China 2019 – 2024 (expected)

Gap year: September 2022 – September 2023
B.E. in Computer Engineering (CE)

Publication

CoNi-MPC: Cooperative Non-inertial Frame Based Model Predictive Control

Baozhe Zhang*, Xinwei Chen*, Zhehan Li, Giovanni Beltrame, Chao Xu, Fei Gao, Yanjun Cao
IEEE Robotics and Automation Letters, 2023 (accepted)
Preprint available (`https://arxiv.org/abs/2306.11259`)

Experience

Freeform Robotics, CHUK-Shenzhen September 2023 – present

Research Assistant Advisors: Dr. Yuan Gao, Dr. Tin Lun Lam

Focusing on the development of motion planning and control algorithms for multi-drone teams using deep reinforcement learning.

Fast Lab, Huzhou Institute of Zhejiang University, Zhejiang, China June 2022 – August 2023

Research Assistant Advisors: Dr. Yanjun Cao, Dr. Fei Gao

- Contributed to the development of control and planning algorithms for unmanned aerial vehicles (UAVs).
- Implemented a ROS wrapper for a 6D pose tracking library, ICG (`https://github.com/zhangbaozhe/icg_ros`), enhancing the lab's technological resources.
- Directed the "CoNi-MPC" project, focusing on innovative cooperative multi-robot systems, resulting in a substantive contribution to the field (`https://fast-fire.github.io/CoNi-MPC/`).

Robotics and Artificial Intelligence Laboratory, CUHK-Shenzhen August 2021 - March 2022

Research Assistant Advisors: Dr. Xiaoqiang Ji, Dr. Huihuan Qian

- Participated in pivotal research on consensus controlling in heterogeneous robot systems, enhancing the lab's project portfolio.
- Involved in developing and enhancing simulation and real-world experimental platforms to improve research capabilities.

Geekup Summer Camp, Shenzhen, China Summer, 2021

Teaching Assitant

- Facilitated learning by tutoring students in Python and Arduino coding, enhancing educational outcomes.
- Prepared comprehensive teaching materials, ensuring a structured and effective learning environment.

Shenzhen Nines Inc., Shenzhen, China October 2020 - October 2021

Co-Founder & Project Manager

- Spearheaded the launch of a start-up, focusing on creating a robust information-sharing platform, HelpHub, on WeChat.
- Successfully cultivated a user base comprising over 50% of students and staff at CUHK-Shenzhen, demonstrating strong project impact and reach.

Skills

- Programming languages: **C++** (11, 17)/C, Python
- Platform and Tools: Linux, ROS1/ROS2, Gazebo, Docker, Unity3D
- Technical interests: computer graphics, Rust, C#, OCaml, Zig

Honors and Awards

Shaw Accomplishment Award, Shaw College, CUHK-Shenzhen November 2021
Undergraduate Research Award, CUHK-Shenzhen November 2021
Dean's List, School of Science and Engineering, CUHK-Shenzhen 2020
Bowen Administration Scholarship, CUHK-Shenzhen 2019