

Zhuoqun Chen

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EDUCATION

University of California, San Diego

M.S. in Electrical and Computer Engineering, *IntelSys, Robotics & Cont* (GPA: 3.71)

La Jolla, CA, USA

Sept. 2022 - Now

Zhengzhou University

B.E. in Telecommunication Engineering, *with Honors* (GPA: 3.81 / 4.0, **Top 1%**)

Zhengzhou, China

Sept. 2017 - July 2021

PUBLICATIONS

* denotes equal contribution

- **Generalized Animal Imitator: Agile Locomotion with Versatile Motion Prior**

Ruihan Yang*, Zhuoqun Chen*, Jianhan Ma*, Chongyi Zheng*,

Yiyu Chen, Quan Nguyen, Xiaolong Wang

[\[Project\]](#) [\[arXiv\]](#)

(Best Paper Award at Deployable Workshop at CoRL 2023)

ICRA Submission, 2024

EXPERIENCE

Wang Lab, UCSD

La Jolla, CA, USA

Graduate Research Assistant, advised by Prof. Xiaolong Wang

Nov. 2022 - Now

- Deployed learning-based controllers on Unitree A1 robot and conducted multiple experiments; developed a multi-processing interface to separate the main control loop and policy execution loop and achieved highly dynamic agile locomotion skills such as jumping; trained low-level motion prior policy used by downstream teleoperation tasks.
- Designed a lightweight visualization module in Python that can monitor the policy commands and controller commands in real time; tuned PD parameters in IsaacGym Simulator that have the smallest sim2real transfer gap.
- Rendered the reference trajectories in MoCap data of quadrupeds in Blender and visualized the latent skill space embeddings via nonlinear t-SNE algorithm.

Bandwidth Wireless-communication & AI LAB (BWA), TongjiU

Shanghai, China

Research Intern, advised by Prof. Junyuan Wang

Nov. 2021 - May 2022

- Learned several classical Visual SLAM and Lidar SLAM frameworks (ORB-SLAM2, LOAM(A-LOAM)).
- Researched some classical motion planning algorithms, including graph-search based ones (A^* , *Jump Point*) and sampling-based ones (RRT, informed RRT^* , etc.), and implemented them in 3D configuration space in ROS and visualized the paths via RViz.
- Studied Object SLAM and Dynamic SLAM in visual tasks and categories of how DL methods can be integrated into visual odometry tasks and SLAM systems.

Horizon Robotics

Shanghai, China

BSP Software Engineering Intern, worked with Team Leader Xiangnan Xie

Sept. 2021 - Feb. 2022

- Developed a Qt-based Windows GUI application to integrate information of different image sensors and cameras, and automatically generate customized configuration files through a graphical interface.
- Processed and analyzed camera data accessed through SQLite driver with Pandas library, and generated records suitable for rendering in tableview (a practice of MVC design pattern), overrode the filter proxy model's virtual function for sorting to get users' desired camera module.
- Implemented the data's visualization in webengine view, synchronized the selection in treeview, filtering in tableview, and rendering in webengine view based on Qt's signal-slot core mechanism.

SELECTED PROJECTS

Trajectory Tracking via Receding-horizon Certainty Equivalent Control and Policy Iteration *June, 2023*

- Solved an infinite-horizon 2D *Lissajous Curve* tracking problem by reformulating it into a sub-optimal Receding-horizon Certainty Equivalent Control problem by fixing Gaussian noise at expectation then implemented it using *CasADi* Non-linear Solver.
- Solved the above original problem with the Policy Iteration algorithm by discretizing the continuous state and control steps and pre-computing a state transition lookup table.

Particle Filter SLAM on Differential-drive Robot with Multiple Sensors *March, 2023*

- Implemented Particle Filter SLAM algorithm in Python using IMU odometry, 2D Lidar scans, encoder, and RGBD measurements from a differential-drive robot; built a 2D probabilistic occupancy grid map and assigned RGB color to it using estimated poses; calibrated sensor data published at different frequency in an off-line manner.

HONORS & AWARDS

- ECE SRIP 2023 Program Scholarship *08/2023*
- China National Scholarship (**Top 1%**) *11/2020*
- MICCAI 2019 Undergraduate Student Travel Award *10/2019*
- University Academic Scholarships *2017-2021*

SERVICES

- Conference Reviewer for ICRA 2024
- Conference Volunteer for MACCAI 2019

TECHNICAL SKILLS

- **Coursework:** Reinforcement Learning, Sensing & Estimation, Computer Vision, Planning & Optimal Control
- **Programming:** Python, C/C++, MATLAB, LaTeX, HTML/CSS, SQL
- **Frameworks:** PyTorch, Blender, IsaacGym, ROS, Qt (Widgets-based)
- **Development Tools:** Git, Kubernetes, Docker, CMake, Bash
- **Data Analysis & Visualization:** Pandas, Matplotlib
- **Hardware:** Unitree A1 & B1, STM32, Raspberry Pi, Arduino
- **Libraries:** Numpy, JAX, Eigen3, CasADi, OpenCV, PCL