Guohua Zhang

+86-13672628419 | 12433015@mail.sustech.edu.cn | guohua-zhang.github.io
Shenzhen, Guangdong - Sustech, China

Objective

Seeking a challenging position in CV and Robotics to leverage my expertise in Embodied AI. I am working on building real-world robot systems that achieve agile and robust locomotion and manipulation, such as legged robots, legged manipulator, dexhand manipulation.

Education

- **Southern University of Science and Technology** *09/2024 - Present*
  M.S. in Robotics; Advisor: Zhaoyuan Ma ShenZhen, China
  - Courses: Advanced Robolics Control(A-), Distrubuted Optimization and Learning(A-), System Identification and Apdative Control(A-)
- **Guangdong University of Technology** *09/2020 - 07/2024*
  B.E. in Information Engineering; GPA: 92.3 / 100 (Rank 1 / 220); Working with: Tianshui Chen, Wei Meng GuangZhou, China
  - Courses: Processing In Digital Image(A+), Date Mining(A), Deep Learning(A)

Projects

- **Agile and Robust Legged Robots Locomotion** *2024.10 - 2025.03*
  Tools: Unitree go1, DeepRobotics Lite3, IsaacLab/IsaacGym, Deep Reinforcement Learning, ROS1 [GitHub]
  - Developed a learning-based locomotion control system for legged robots equied with only joint encoders and IMU .
  - Developed a sim2sim in mujoco and sim2real pipline for go2 and lite3 robots.
  - Implemented Internal Model Control to extract hybrid internal embedding from a sequence of historical observations, achieving stability and agility.
  - Implemented contrastive learning to optimize the internal model and PPO to optimiza control policy.
- **Speech-Preserving Facial Expression Manipulation** *2022.09 - 2023.03*
  Tools: cross-modal correlation learning, audio and visual similarities [GitHub]
  - Proposed a novel symmetrical cross-modal correlation learning algorithm, which learns cross-modal correlations and incorporates these correlations to construct paired supervisions to promote SPFEM performance without incurring additional annotations.
  - Designed symmetrical cross-modal metric that can learn the correlations between audio and visual similarities.
  - Conducted extensive experiments that incorporate SCMCL into current advanced methods and present qualitative and quantitative evaluations.
- **Robust and High-Speed Wheeled Robot Motion Control and State Estimation** *2021.07 - 2021.12*
  Tools: Wheeled Robots, STM32, PID, YOLO, Kalman Filter [GitHub]
  - Developed a robust and high-speed wheeled robot capable of traversing diverse obstacles and performing manipulation tasks.
  - Implemented Kalman Filters for Robust state estimation.
  - Built a real-time motion controller using PID for wheeled robot dynamics.
  - Built an end-to-end YOLO-based pipeline for real-time digit recognition at 100 FPS on rk.

Publications

* denotes equal contribution

[1] PCLP:An Improved Pairwise Contrastive Learning Pipeline For Multi-Label Recognition with Partial Labels
Guohua Zhang, Tianshui Chen
arXiv 2023

[2] Learning Symmetrical Cross-Modal Correlations for Speech-Preserving Facial Expression Manipulation
Zhihua Xu*, **Guohua Zhang***, Tianshui Chen
ACM International Conference on Multimedia (ACM-MM) 2023

[3] Evaluation of ORB-SLAM2 and Stereo-DSO in Complex indoor-outdoor Scenes
Wenpu Li, Xuanhua Chen, Peidong Zeng, Zhenting Wen, **Guohua Zhan**, Wei Meng
IEEE International Conference on Electronic Information and Communication Technology (ICEICT) 2023

Honors and Awards

- **Graduation with honor: Outstanding Graduates of GDUT** *2024*
- **Outstanding Student Scholarship of GDUT (1%, 5 times)** *2020-2024*
- **National Scholarship (0.5%)** *2022*
- **National Scholarship (0.5%)** *2021*

SKILLS

- **Programming:** Python, C++
- **Tools:** ROS, Pytorch, IsaacGym/IsaacLab, Mujoco, Git, MATLAB, LATEX, Opencv
- **Robot:** Unitree Go2/Go1, Unitree D1/Z1 arm, Inspire Dexhand, DeepRobotics Lite3, AMOVLAB-Z410