
# Guiyong Zheng
郑桂勇
Robotics & Deep Learning

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GitHub Profile


## Education

- **Sun Yat-sen University** *2024.09-present*
  *MPhil, School of Artificial Intelligenceg,* Supervisor: Prof. Boyu Zhou
- **Xidian University** *2020.09-2024.07*
  *B.Eng, School of Electronic Engineering, Rank: 1%* Supervisor: Prof. Kun WEI

## Experience

- **STARLab, SUN YAT-SEN University** *2023.07-Present*
  *Research Intern, Supervised by Dr. Boyu Zhou* Zhuhai, China
- **IRobot, Xidian University Robomaster Team** *2020.10-2023.07*
  *Algorithm Group Leader* Xi'an, China

## Publications

- **MASSTAR: A Multi-Modal Large-Scale Scene Dataset with a Versatile Toolchain for Surface Prediction and Completion**
  *Tech Report, 2024.*
  −**Guiyong Zheng***, Jinqi Jiang*, Chen Feng*, Shaojie Shen, and Boyu Zhou
- **FC-Hetero: Fast and Autonomous Aerial Reconstruction Using a LiDAR-Visual Heterogeneous Multi-UAV System**
  *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024 (Oral)*
  −Mingjie Zhang*, Chen Feng*, Zengzhi Li, **Guiyong Zheng**, Yiming Luo, Zhu Wang, Jinni Zhou, Shaojie Shen, and Boyu Zhou

## Selected Projects

**RoboMaster: Autonomous Aiming and Navigation System** 2020.09 − 2023.09
*Algorithm Group Leader*
- **Autonomous Aiming System**: Stably tracked and hit targets within 6m using OpenCV for detection and IMU integration. Use EKF and constant acceleration Model for target state observation, and the Shooting method for ballistic calculation.
- **Key Point Regression Network**: Enhanced Yolov5 by regressing 2D position of feature corners in output layer. Trained models with various backbones. Deployed on Intel i5-8400 using OpenVINO framework, achieving over 110fps.
- **2D Navigation System**: Employed Slamtec A2 lidar with integrated wheel odometry and IMU for motion distortion correction. Used AMCL algorithm for localization and implemented A* and TEB algorithms for path planning.
- **Simulator for Autonomous Aiming System**: Developed a first-person-view simulator for the autonomous aiming system based on Unity, providing high-fidelity first-person imagery and ground truth data required for motion estimation algorithms.

**Cross-lens Pedestrian Trajectory Tracking System** 2022.07 − 2022.09
*National Undergraduate Electronic Design Contest*
- **Target Detection and Re-Identification Tasks**: Used pruned and quantized versions of Yolov5n and HACNN for detection and re-identification tasks, and deployed them using the ArmNN framework on the RZ/G2L platform.
- **Single-lens Tracking Method**: Designed a tracker is a modified SORT+KCF (under the ROI area), which achieves higher recognition accuracy improved than without a tracker 30% and higher real-time requirements.
- **System framework Design**: Responsible for designing the overall framework and Qt-based front-end interactive interface, as well as setting up and utilizing the cross-compilation environment, among other tasks.

## Selected Awards

- **National Scholarship** - Ministry of Education, PRC *2021.12 & 2023.12*
- **RoboMaster, National Second Prize** - DJI *2022.08 & 2023.08*
- **National Undergraduate Electronic Design Contest, National Second Prize** - NUEDC *2022.09*
- **Hua Meng Scholarship** - Xidian University *2023.12*
- **Outstanding Student** - Xidian University *2021.12 & 2022.12 & 2023.12*
- **Mathematical Contest In Modeling, Meritorious Winner** - COMAP *2022.05*

## Technical Skills

**Programming Tools**: Python/C++/Matlab/C#
**Frameworks**: PyTorch/TensorFlow/ROS/Linux/OpenVINO/TensorRT/QT/Unity