Zhang Qi

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EDUCATION

UNIVERSITY OF GLASGOW
MSc in Data Science
2022.09 - now | Glasgow, UK
WA: B2(High Merit)

THE NORTH UNIVERSITY OF CHINA
BSc in Software Engineering
2018 - 2022 | Tai yuan, China
Bachelor in Software Engineering
WA(Weighted Average): 85.98 / 100

AWARDS

SCHOLARSHIP
*the 2nd-Class Scholarship (RMB 1200)
*the 3rd-Class Scholarship (RMB 600)
*the Science and Technology Innovative Scholarship of Yu Xin (RMB 1000)

CONTEST
Mathematical Contest in Modeling
*S Prize | As member
Contemporary Undergraduate Mathematical Contest in Modeling
*Provincial Second Prize | As leader
Lan Qiao Cup Algorithm Contest
*Provincial-level Third Prize

LINKS

Github:58+stars/program// **Zhang Qi**
YouTube:// **My work**
Bili:8000+viewers// **My work**

SKILLS

PROGRAMMING
Familiar:
C • C++ • Shell • Python • Latex • TensorRT • Pytorch
Servers Used:
Linux(My personal laptop is equipped with Ubuntu20.04)

THEORY
3D Reconstruction
SFM • vSLAM • MVS• TSDF
Deep Learning:
Faster-R-CNN • FCOS • YOLOX

TOOLS
GCC • Vim • gedit • StarUML • ROS • VisualDesigner • PCL • EVO • Capcut

PROJECTS

SEMANTIC SLAM FOR MOBILE ROBOTS IN DYNAMIC ENVIRONMENTS BASED ON VISUAL CAMERA SENSORS |
Passing the preliminary examination by Measurement Science and Technology | First and Corresponding author
July 2022 | Tai yuan, China

I propose a semantic vSLAM with high accuracy in the dynamic environment. It can run in real time and be robust to known and unknown dynamic objects. The general idea is to use the unique strategies I raised to deal with the information obtained from object detection and motion consistency checking.

- Method overview:
  1. This method combines ORB-SLAM3 and YOLOX-s, which can detect 80 classes in the scenes.
  2. The method is enhanced by motion consistency checking and customised measures.
  3. The method improves the outdoor stereo Kitti dataset by 15%, and the RGB-D indoor TUM and Bonn datasets by around 80% compared to ORB-SLAM3.
- Method details:
  1. The method does not assume that there are a few classes, like a car, human, and so on, with potential moving possibilities and believes that all objects have the possibility of motion.
  2. The method uses different strategies to deal with people and other kinds of objects.
  3. The method takes different approaches to people in standing and sitting positions and proposes a unique algorithm for identifying the posture.
  4. An adaptive threshold adjustment algorithm is raised to have the same performance for different kinds of objects.
- Method effects:
  1. Classes detected by the semantic method can significantly benefit the system's accuracy. which means that it can deal with more complex dynamic scenes.
  2. The system is efficient for all types of RGB cameras.

CDS-SLAM: SEMANTIC MAPPING
June 2022 | Tai Yuan, China

This is my undergraduate dissertation. I deploy TensorRT optimized YOLOX in the front end of ORB-SLAM3 for object detection and eliminate all points belonging to the human bounding box. At the same time, the semantic information is sent to the mapping module to dye the 3D point cloud.

- Method overview:
  1. The semantic module only combines the ORB-SLAM3 and YOLOX-s
  2. The mapping module refers to a system for semantic Labelling 3D Point Cloud in vSLAM[1].
- Open source work:
  The work is open source on **Github** and presented on **Bili** (8000+v).

1. X. Qi, S. Yang, and Y. Yan, Deep Learning Based Semantic Labelling of 3D Point Cloud in Visual SLAM, 10 2018, vol. 428, p. 012023.