ZIBU WEI

Tsinghua University ◇ Beijing, 100084, P.R.China
(+86) 156 2036 8163 ◇ zbwei18@gmail.com ◇ https://weizb18.github.io/

EDUCATION

Tsinghua University, Beijing, P.R.China

- **Bachelor** of Engineering in the Department of Automation (expected)
- **GPA: 3.75/4.0**

Core Courses

Computer Languages and Programming (4.0/4.0), C++ Program Design and Training (4.0/4.0), Foundation of Artificial Intelligence (4.0/4.0), Applied Software Systems: Analysis and Design (4.0/4.0), Theory of Automatic Control (4.0/4.0), Complex Analysis (4.0/4.0), Operations Research (4.0/4.0)

PUBLICATIONS & MANUSCRIPTS

1 **Zibu Wei**, Yi Wei, Ziwei Wang, Zhenyu Wu, Jiwen Lu, Jie Zhou. Object Retrieval and Shape Completion from Multi-view RGB-D Images of Dense Clutter. Plan to submit to *CoRL2022*. In Progress.

2 Yi Wei, **Zibu Wei**, Yongming Rao, Jiaxin Li, Jiwen Lu, Jie Zhou. LiDAR Distillation: Bridging the Beam-Induced Domain Gap for 3D Object Detection. Submitted to *ECCV2022*. Under review.

3 Zhenyu Wu, Ziwei Wang, **Zibu Wei**, Yi Wei, Haibin Yan. Smart Explorer: Recognizing Objects in Dense Clutter via Interactive Exploration. Submitted to *IROS2022*. Under review.

PROJECTS

1 Lab-Cruising Robot. **Zibu Wei**, Zhuoshi Pan, Chentao Li, Dongyang He. Adviced by Prof. Yanpin Ren.

2 Facial Expression Recognition. **Zibu Wei**. Adviced by Prof. Rui Jiang.

3 LianLianKan Small Game. **Zibu Wei**. Adviced by Prof. Rui Jiang.

RESEARCH INTEREST

Deep Learning, Computer Vision

RESEARCH EXPERIENCE

Tsinghua University, Beijing, P.R.China
Intelligent Vision Group, Department of Automation *Jul, 2021 – present*
Research Assistant, Advisors: Profs. Jiwen Lu & Jie Zhou
Project: Object Retrieval and Shape Completion from Multi-view RGB-D Images of Dense Clutter

- We propose a pipeline to retrieve objects and complete objects' shapes from multi-view RGB-D images of dense clutter. We segment 2D images to find out every object and generate point clouds using depth information. By matching and merging corresponding point clouds from each view, we generate objects' incomplete point clouds. Then, we input point clouds into an encoder and get the query features. By retrieving the query feature in template features database, we get the most similar template and complete the object shape.

Project: LiDAR Distillation: Bridging the Beam-Induced Domain Gap for 3D Object Detection

- We propose a progressive framework to mitigate the domain gap induced by different LiDAR beams for 3D object detection. First, low-beam pseudo LiDAR is generated by downsampling high-beam point clouds. Then the teacher-student framework is employed to distill rich information from high-beam data. Experiments on Waymo, nuScenes and KITTI datasets demonstrate the effectiveness of the method.

Project: Smart Explorer: Recognizing Objects in Dense Clutter via Interactive Exploration

- We propose an interactive exploration framework for recognizing all objects in dense clutters based on multi-view RGB-D cameras. The robot pushes the clutter to reduce the prediction uncertainty with spatial relation constraint, which significantly enhances the recognition accuracy. Experiments indicate that our Smart Explorer outperforms random pushing by a large margin and sizably increases the recognition accuracy with only a few actions.

Tsinghua University, Beijing, P.R.China
Robotics Laboratory, Department of Automation *Jun, 2021 – Aug, 2021*
Research Assistant, Advisor: Prof. Yanpin Ren
Project: Lab-Cruising Robot

- Designed a lab-cruising robot based on Qizhi ROS Platform, which has great functions(Speech Interaction, Photography and Video Recording, Temperature Measurement, SLAM and Navigation, Remote Control, etc.)
- Applied the robot on floor5 in the Main Building of Tsinghua University to introduce labs to visitors

SCHOLARSHIPS & AWARDS

- **2021 Academic Excellent Award**
- **2020 Samsung Scholarship** (Highest scholarship in Tsinghua sponsored by SAMSUNG, **0.2%**)
- **2020 National Physical Competition for College Students in China** (**First Prize**)
- **2020 Tsinghua Scholarship**
- **2020 Social Work Award**
- **2020 Academic Progress Award**
- **2021 Three-Star Volunteers, Beijing**

PROGRAMMING SKILLS

Linux, C/C++, Python, Pytorch, Markdown, etc.