

Research Interests

Intelligent Software System.

- Reliable sensing system for autonomous driving.
- Adversarial attack and defense on perception.

3D Computer Vision.

- Visual and LiDAR SLAM (Simultaneous Localization and Mapping).

Education

- 01/2021 - 01/2025 **University of Alberta**, Edmonton, AB, Canada.
(Expected) Department of Electrical and Computer Engineering
Ph.D. student Software Engineering and Intelligent Systems
- 09/2019 - 12/2020 **University of Waterloo**, Waterloo, ON, Canada.
Department of Electrical and Computer Engineering
M.Eng Artificial Intelligence and Machine Learning specialization, GPA: 92.14/100
- 09/2015 - 06/2019 **Beijing University of Posts and Telecommunications**, Beijing, China.
School of Information and Communication Engineering
B.Eng Telecommunication Engineering, GPA: 3.52/4.0

Research & Work Experiences

- 01/2021 - Present **Graduate Research Assistant**, *University of Alberta*, Edmonton, AB, Canada.
Graduate Research Assistant at 2046 ISL Group.
Supervisor: Prof. Lei Ma
- Developed a new framework for defending adversarial attacks on 3D point cloud classifiers. (Ongoing)
 - Proposed a new method for 3D point cloud completion, summarized in the paper, *CarveNet: Carving Point-Block for Complex 3D Shape Completion*, submitted to ICCV 2021.
- 11/2018 - 06/2019 **Research Intern**, *Megvii Technology Ltd.*, Beijing, China.
Research Intern at SLAM Group.
Mentor: Mr. Xiao Liu & Dr. Yijia He
- Derived the motion model of the range finder, and evaluated the effects of its fast motion on Point-to-line ICP (Iterative Closest Point) algorithm, published as a CN Patent.
 - Implemented a laser-odometer calibration tool based on Canonical Scan Match and Maximum-likelihood with C++. <https://github.com/MegviiRobot/OdomLaserCalibraTool>
- 07/2018 - 09/2018 **Non-graduating Research Student**, *National University of Singapore*, Singapore.
Non-graduating Research Student at Unmanned System Research Group.
Supervisors: Prof. Ben M. Chen & Dr. Feng Lin
- Designed and implemented a continuous localization and mapping framework in low-light GPS-denied environments based on multi-sensors fusion.
 - Researched on image enhancement for underwater robots' perception based on conditional Generative Adversarial Networks.
- 09/2017 - 06/2018 **Research Intern**, *Tsinghua University*, Beijing, China.
Research Intern at iVip Group.
Supervisor: Prof. Fei Qiao
- Participated in ROS programming for a Visual Semantic SLAM system based on ORB-SLAM2 and SegNet, published as a CN Patent.

Teaching Experiences

- 05/2020 - 08/2020 **Teaching Assistant**, *University of Waterloo*, Waterloo, ON, Canada.
Teaching Assistant of ECE 203 (Probability Theory&Statistics 1).
 - Held office hours and tutorials weekly.
 - Graded assignments and exams.

Publications

- Patents
 - Yijia He, Xizhen Xiao, **Zhijie Wang**, Xiao Liu, **Motion estimation methods, devices, computer equipment and storage medium**, *CN Patent Application No. CN110824496A*. Published.
 - Xinjun Liu, Chao Yu, Fei Qiao, Fugui Xie, **Zhijie Wang**, **A Robot SLAM System towards Dynamic Environments**, *CN Patent Application No. CN108596974A*. Published.

Technical Experience

- Languages C++, Python, MATLAB, R
Softwares ROS, OpenCV, PyTorch, Git

Language Proficiency

- English **IELTS: 7** Reading: 7.5, Listening: 7.5, Speaking: 6, Writing: 6 (Jan 2019)

Honors and Awards

- 2016 & 2017 & 2018 Scholarship of Beijing University of Posts and Telecommunications