

# ZHUORU ZHANG

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portfolio:<https://shirleyzr1.github.io> github:<https://github.com/shirleyzr1>

## EDUCATION

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### East China Normal University

B.E. in Telecommunication Engineering GPA:3.62/4.0 (86/100)

*Sept.,2016 - Jun.,2020*

*Shanghai, China*

### Northwestern University

Master of Science in Robotics(MSR) GPA:4.0/4.0

*Sept.,2020 - Dec.,2022(expected)*

*Evanston, IL*

## EXPERIENCE

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### Software Engineer Intern

*gHz Tech, Shanghai, China /Mar.,2022 - May.,2022*

- Designed an Android app to get real-time wireless signal measurements through AT command, send them back to the server through socket, and visualize the result received from server
- Developed a server using Java to communicate with android phone,saving the signal for some time and calculated the position using fingerprint method based on wireless signal

## PROJECTS

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### 3D Object Detection from Point Cloud on KITTI

*Jan.,2022 - Mar.,2022*

- Pre-segmented point cloud from object detection dataset using ground removal and DBSCAN method
- Trained PointNet with PyTorch to classify over different points and reached 85% accuracy
- Extracted point clouds from a given bounding box and generated 3D orientated bounding box based on classified point cloud and reached 60% accuracy for vehicle detection.

### Robot Arm 3D Scanner

*Mar.,2022 - Mar.,2022*

- Designed a ROS pipeline using both C++ and python for robot arm control and point cloud capture
- Processed the point cloud data by cropping and filtering, and reconstructing the 3D image by transforming all the captured frames to same coordinate using PCL

### SLAM Differential Drive robot from Scratch with ROS

*Jan.,2022 - Mar.,2022*

- Designed the C++ library to calculate transformation and kinematics for a differential drive robot model
- Implemented the Extended Kalman filter based on odometry and simulated landmark detection signal and lidar data and tested them on the both simulated and real turtlebot3
- Implemented the circle detection and fitting algorithm with data association to detect obstacles

### Particle Detection System

*Jan.,2021*

- Built the application using UART to communicate with peripherals using C++ on Windows CE
- Designed the UI of the system in QT to visualize the data in real time and used sqlite database to filter the needed data based on date and standard

### AI Robust Unmanned Aerial Vehicle(UAV) Design

*April.,2018 - June.,2019*

- Researched on inertial navigation theory and attitude algorithm
- Designed an UAV capable of static and robust hovering and automatic control
- Tuned proper PID parameters in velocity, position and height control
- Wrote shape detection and object detection modules using OpenCV package in python

## TECHNICAL SKILLS

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### Programming

Proficient:Python,Matlab Intermediate:C++,Java

### Other

ROS,GIT,LINUX,QT,WebGL,PCL,OpenCV