

# Zida Wu

<https://milkytip.github.io/>

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## EDUCATION

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### Shanghai Jiao Tong University

*September 2017 - Present*

Master of Science in Electrical Engineering

Department of Electronic and Electrical Engineering

### Xidian University

*September 2013 - July 2017*

Bachelor of Telecommunication Engineering

Department of Telecommunication Engineering

## AWARDS

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Third prize of the 15th China Graduate Mathematical Modelling Contest

*December 2018*

Chinese National Graduate Scholarship (top 3%)

*November 2018*

Merit Student Prize of Shanghai Jiao Tong University (top 5%)

*October 2018*

First Prize Scholarship of Shanghai Jiao Tong University (top 20%)

*September 2017*

Outstanding Graduates of Xidian University (top 5%)

*July 2017*

## PUBLICATIONS

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Z. Wu, and P. Liu, "Pseudorange Double Difference and PDR Fusion Algorithm Using Smartphone GNSS Raw Measurements", in *2019 China Satellite Navigation Conference (CSNC) (Invited talk)*.

A. Rehman, Q. Liu, Z. Wu, H. Zhu, J. Qian, et al. "PDR/GNSS Fusion Algorithm Based on Joint Heading Estimation", in *2019 China Satellite Navigation Conference (CSNC)*.

Z. Wu, P. Liu, Q. Liu, et al. "MEMS-based IMU Assisted Real Time Difference Using Raw Measurements from Smartphone", in *2018 International Technical Meeting of The Satellite Division of the Institute of Navigation (ION GNSS+)*.

## RESEARCH

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### Intelligent Robotic Navigation and Manipulation System

*Agency for Science, Technology and Research (A\*STAR) of Singapore*

*July 2019 - Present*

- Developed a docking SLAM method that tracks moving objects with cm-grade docking accuracy for autonomous vehicles.
- Constructed an images fusion module to combine the masks of object and depth geometry segmentation, and used omnidirectional wheels to avoid large rotation under close range.
- Such a system may be deployed in autonomous factories, to dynamically follow mobile target and then implement docking and mechanical grab.

### Multi-sensor Fusion for Inspection Robot

*Shanghai Jiao Tong University*

*December 2018 - Present*

- Introduced a loose-coupled framework that fuses IMU, SLAM, GNSS and other sensors separately, which tolerates single sensor failure during operation.
- Applied an error-state Kalman Filter to optimize the independent poses from SLAM and IMU, and fed back into the nominal states to acquire the genuine pose.

- A second error-state filter was utilized to fuse the GNSS measurements to prevent state estimation drift in long-term operation.
- This algorithm achieved seamless and continuous positioning at large-distance scale (km-grade) across the indoor and outdoor environments.

### **Bluetooth Indoor Positioning System**

*Shanghai Jiao Tong University*

*August 2018 - October 2018*

- Aimed to realize accurate Bluetooth signal arrival-of-angle (AOA) estimation, using single channel 6-antenna array.
- Solved the phase drift problem caused by antenna switch and multipath by dynamic signal polarization switch and intermittent sampling with frequency compensation.
- The algorithm achieved 5-degree accuracy in estimating the AOA of Bluetooth signal, which means cm-grade localization accuracy could be achieved with this system.

### **High-accuracy GNSS Positioning on Portable Smartphone**

*Shanghai Jiao Tong University*

*July 2017 - August 2018*

- Developed an algorithm which achieved high-accuracy and reliable positioning of smartphones under complex environment using GNSS-IMU fusion.
- Utilized the pseudorange double-difference (PDD) to eliminate the atmosphere, satellite, and phone clock error, as well as decoupled the pseudorange and velocity measurements based on the short-baseline hypothesis.
- Joint heading estimation using Pedestrian Dead Reckoning (PDR) and GNSS Doppler.
- This algorithm calibrated the PDR gait length loss and heading drift in the long-term, and maintained high smooth and accuracy in the short-term.

## **TEACHING EXPERIENCE**

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**Teaching assistant of Digital Signal Processing**

*Autumn 2018*

Instructor: Prof. Xiangming Geng

## **TECHNICAL STRENGTHS**

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**Programming Languages**

C/C++, Python, MATLAB, Java, LaTeX, Markdown

**Software Platforms**

ROS, Linux, Android, Windows

**Hardware Platforms**

Jetson, Arduino, NUC, eZdsp 5535