

Zida Wu

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

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EDUCATION

Shanghai Jiao Tong University

September 2017 - Present

Master of Electronics and Communication Engineering

Department of Electronic and Electrical Engineering

Xidian University

September 2013 - July 2017

Bachelor of Telecommunication Engineering

Department of Telecommunication Engineering

AWARDS

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

Second Prize Scholarship of Xidian University

September 2015

First Prize Scholarship of Xidian University

September 2014

PUBLICATIONS

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

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+)*.

A Positioning System under GNSS Double Difference for Portable Intelligent Devices [P]. *Chinese National Invention Patent. (Patent No. CN201810091248.1)*.

RESEARCH

Intelligent Robotic Navigation and Manipulation System

*Agency for Science, Technology and Research (A*STAR) of Singapore July 2019 - September 2019*

- 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

Teaching assistant of Digital Signal Processing

Autumn 2018

Instructor: Prof. Xiangming Geng

TECHNICAL STRENGTHS

Programming Languages

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

Software Platforms

ROS, Linux, Android, Windows

Hardware Platforms

Jetson, Arduino, NUC, eZdsp 5535