Zida Wu

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EDUCATION

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

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

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

Intelligent Robotic Navigation and Manipulation System
*Agency for Science, Technology and Research (A*STAR) of Singapore* *July 2019 - Present*

- Developed a docking SLAM that tracks moving objects with cm-grade docking accuracy for autonomous vehicle.
- Constructed an images fusion module to combine the mask 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 factory, to dynamically follow the 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 signal lost during operation.
- Applied error-state KF to optimize the independent poses from SLAM and IMU, and fed back into the nominal state to acquire the genuine pose.
- A second error-state filter is 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 the 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
Software Platforms	ROS, linux, Android, Windows
Hardware Platforms	Jetson, Arduino, NUC, eZdsp 5535