Zida Wu

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EDUCATION AND WORK EXPERIENCE

University of California, Los Angeles *September 2020 - Present*
Ph.D. of Electrical and Computer Engineering
Advisor: Prof. Ankur Mehta

Tencent *August 2020 - January 2021*
Intern in RoboticsX Lab, Technology and Engineering Group

Shanghai Jiao Tong University *September 2017 - April 2020*
Master of Electronics and Communication Engineering
Advisor: Prof. Peilin Liu & Prof. Fei Wen

Agency for Science, Technology and Research of Singapore *July 2019 - September 2019*
Summer Intern in Mechatronics Lab, SIMTech,
Advisor: Dr. Haiyue Zhu

Xidian University *September 2013 - July 2017*
Bachelor of Telecommunication Engineering

AWARDS

University Fellowship, UCLA *September 2020*
Outstanding Graduates of Shanghai Jiao Tong University *December 2019*
China National Graduate Scholarship *November 2018*
Merit Student Prize of Shanghai Jiao Tong University *October 2018*
Outstanding Graduates of Xidian University *July 2017*
Pacesetter of Outstanding Volunteer *September 2016*
Excellent Student Cadre of Xidian University *September 2015*
First Prize Scholarship of Xidian University *September 2014*

PUBLICATIONS

Z. Wu, Z. Zhao, M. Ankur. "Joint State and Input Estimation of Agent Based on Recursive Kalman Filter Given Prior Knowledge ", in *2022 IEEE International Conference on Robotics and Automation (ICRA 2022)*

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

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 Navigpation (ION GNSS+)(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).*

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

Carrier dual-mode GNSS satellite-based enhanced positioning method for portable intelligent equipment [P]. *Chinese National Invention Patent. (Patent No. CN202010718188.9).*

RESEARCH

Fully Decentralized Multi-agent System based on Reinforcement Learning
University of California, Los Angeles *Octorber 2021 - present*

- Intended to realized fully decentralized, both in training and execution, multi-agent system in collaborative but heterogeneous tasks.
- Based on mean-field theory, a virtual agents will make an approximation of all neighborhoods.
- Maintain the virtual team leader in each state, team leader will guide each agent to take actions only based on neighborhoods information.

Joint Input and State Estimation of System
University of California, Los Angeles *January 2021 - September 2021*

- Realized Minimum-variance and unbiased estimation of input and state using recursive Kalman filter.
- Combined the continuous space and discrete space into a unified theory based on the EM algorithm.
- Formulated inequality problems by introducing prior knowledge of events as the constraint, realize an optimal input estimation with lower variance and more accurate decision-making.

Robots for Automatically Replacing Dedicated Server
RoboticsX Lab, Technology and Engineering Group *August 2020 - January 2021*

- Participated into developing a localization and navigation system for the robot, both in hardware and software.

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.
- Utilized the low-frequent masks (based on Mask_RCNN) as predictive areas for feature detection, and utilized depth geometry discontinuity and convexity as real-time auxiliary segmentation.

Multi-sensor Fusion for Inspection Robot
Shanghai Jiao Tong University *December 2018 - Present*

- Developed a loose-coupled framework that fuses IMU, SLAM, GNSS and other sensors separately, which tolerates single sensor failure during operation and achieves seamless and continuous positioning
- Applied two-layer error-state Kalman Filter (ESKF) to optimize SLAM, IMU, and GPS position and Doppler, in which sharing the same nominal state.
- Loosed the rigid constrain between the world frame and vision frame, and utilized gravity as implicit observation to align SLAM-IMU vision frame to GNSS world frame.

High-accuracy GNSS Positioning on Portable Smartphone
Shanghai Jiao Tong University *July 2017 - August 2018*

- Developed a coupled GNSS-IMU positioning framework on Android smartphones.
- Utilized the pseudorange double-difference model (PDD) to eliminate common errors, and decoupled the pseudorange and velocity measurements based on the short-baseline hypothesis.
- Joint heading estimation using Pedestrian Dead Reckoning (PDR) and GNSS Doppler.

TECHNICAL STRENGTHS

Programming Languages	C/C++, Python, MATLAB, Java, LaTeX, Markdown
Software Platforms	ROS, Linux, Android, Windows
Hardware Platforms	Jetson, Arduino, NUC

VOLUNTEER ACTIVITY

President of Iridescent Cloud Volunteer Association *September 2014-July 2015*