

# Chuchu Chen

## Education & Training

- 2020-Present **PhD Mechanical Engineering**, *University of Delaware, Newark, DE.*  
Advisor: Dr. Guoquan(Paul) Huang, Dr. Bert Tanner
- 2021-Present **MS Computer & Information Science**, *University of Delaware, Newark, DE.*  
Advisor: Dr. Guoquan(Paul) Huang
- 2017 **MS Mechanical Engineering**, *University of Delaware, Newark, DE.*  
Advisor: Dr. Bert Tanner
- 2013 **BS Mechanical Engineering**, *Harbin Engineering University, Harbin, China.*

## Professional Experience

- 2020-Present **Research Assistant** *University of Delaware*
- [1] Consistent Visual-inertial Navigation systems (VINS)
  - [2] Aided inertial navigation with geometric constraints
  - [3] Nonlinear state estimation and optimization theory
  - [4] Dynamic system parameter calibration and identification
  - [5] Navigation function for point robot in dynamic environment
- 2019-2020 **Teaching Assistant** *University of Delaware*
- 2019F MEEG 311: Vibration and Control
  - 2020/2023S MEEG 677: Estimation I

## Publications

### Journal Articles

- [J2] C. Wei\*, **C. Chen\***, H. G. Bert" Navigation Functions with non-Point Destinations and Moving Obstacles ", Autonomous Robots, 2023 (\*equally contributed)
- [J1] Y. Yang, **C. Chen**, W. Lee, G. Huang" Decoupled Right Invariant Error States for Consistent Visual-Inertial Navigation", IEEE Robotics and Automation Letters (R-AL), 2022.

### Conference Papers

- [C7] **C. Chen**, P. Geneva, Y. Peng, W. Lee and G. Huang" Optimization-based VINS: Consistency, Marginalization, and FEJ", International Conference on Intelligent Robots and Systems (IROS), 2023 [submitted].
- [C6] **C. Chen\***, P. Geneva\*, Y. Peng, W. Lee and G. Huang" Monocular Visual-Inertial Odometry with Planar Regularities", International Conference on Robotics and Automation (ICRA), 2023.
- [C5] **C. Chen**, Y. Yang, P. Geneva, W. Lee and G. Huang" Visual-Inertial-Aided Online MAV System Identification", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022.
- [C4] **C. Chen**, Y. Yang, P. Geneva and G. Huang" FEJ2: A Consistent Visual-Inertial State Estimator Design", International Conference on Robotics and Automation (ICRA), 2022.

- [C3] **C. Chen**, L. Li and H. G. Bert " Navigation Functions with non-Point Destinations and Moving Obstacles", American Control Conference (ACC), 2020.
- [C2] P. Geneva\*, N. Merrill\*, Y. Yang, **C. Chen**, W. Lee, and G. Huang" Versatile 3D Multi-Sensor Fusion for Lightweight 2D Localization", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),2020.
- [C1] Y. Yang, B. P. W. Babu, **C. Chen**, G. Huang, and L. Ren" Analytic Combined IMU Integration (ACI<sup>2</sup>) for Visual-Inertial Navigation", International Conference on Robotics and Automation (ICRA), 2020.

### Open Source

- [O2] **ov\_plane**: Monocular Visual-Inertial Odometry with Planar Regularities [ICRA23] [https://github.com/rpng/ov\\_plane](https://github.com/rpng/ov_plane)
- [O1] **RPNG AR Table Dataset**: Indoor AR Table Visual-Inertial Datasets [ICRA23] [https://github.com/rpng/ar\\_table\\_dataset](https://github.com/rpng/ar_table_dataset)

### Technical Report

- [T5] **C. Chen**, P. Geneva, Y. Peng, W. Lee and G. Huang" Optimization-based VINS: Consistency, Marginalization, and FEJ" [to appear]
- [T4] **C. Chen**, Y. Yang, W. Lee ,P. Geneva and G. Huang " Supplementary Materials: Visual-Inertial-aided Online MAV System Identification URL: [https://chuchuchen.net/downloads/reports/tr\\_mav\\_final.pdf](https://chuchuchen.net/downloads/reports/tr_mav_final.pdf)
- [T3] **C. Chen**, Y. Yang, P. Geneva and G. Huang " Technical Report: FEJ2: A Consistent Visual-Inertial State Estimator Design URL: [https://chuchuchen.net/downloads/reports/tr\\_fej2.pdf](https://chuchuchen.net/downloads/reports/tr_fej2.pdf)
- [T2] Y. Yang, **C. Chen**, W. Lee and G. Huang " Supplementary Materials: Decoupled Right Invariant Error States for Consistent Visual-Inertial Navigation [https://chuchuchen.net/downloads/reports/tr\\_dri.pdf](https://chuchuchen.net/downloads/reports/tr_dri.pdf)
- [T1] Y. Yang, **C. Chen**, and G. Huang " Supplementary Materials: Analytic Combined IMU Integration (ACI<sup>2</sup>) for Visual-Inertial Navigation" URL: [https://chuchuchen.net/downloads/reports/tr\\_aci.pdf](https://chuchuchen.net/downloads/reports/tr_aci.pdf)

## --- Academic Service

### Journal Reviewer

TR-O IEEE Transactions on Robotics

RA-L IEEE Robotics and Automation Letters

### Conference Reviewer

ICRA IEEE International Conference on Robotics and Automation

IROS IEEE/RSJ InternationalConference on Intelligent Robots and Systems

RSS Robotics: Science and Systems

MED Mediterranean Conference on Control and Automation

## --- Professional Membership

IEEE

IEEE Robotics and Automation Society

IEEE Control Systems Society