

# YANYU ZHANG

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## EDUCATION

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| <b>University of California, Riverside</b><br>Ph.D. in Electrical Engineering, Advisor: Wei Ren  | Sep. 2021 - Mar. 2025 |
| <b>Boston University</b><br>M.S. in Electrical and Computer Engineering, Advisor: John Baillicul | Sep. 2019 - May 2021  |
| <b>University of Detroit Mercy</b><br>B.S. in Robotics   | Sep. 2018 - May 2019  |
| <b>Beijing University of Chemistry Technology</b><br>B.S. in Robotics                            | Sep. 2015 - Jun. 2018 |

## RESEARCH EXPERIENCE

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| <b>University of California, Riverside</b><br><i>Research Assistant, Cooperative Vehicle Networks Laboratory (COVEN)</i>   | Sep. 2021 - Mar. 2025<br><i>Riverside, CA</i> |
| <ul style="list-style-type: none"><li>• Cooperative visual-inertial odometry with points and lines</li><li>• NeRF-aided visual-inertial odometry</li><li>• Infrastructure-less cooperative SLAM for multi-user AR</li><li>• Extrinsic calibration between camera and LiDAR</li></ul> |   |
| <b>Boston University</b><br><i>Research Assistant, Boston University Robotics Laboratory</i>   | Jan. 2020 - May 2021<br><i>Boston, MA</i>     |
| <ul style="list-style-type: none"><li>• Motion planning, Optical flow, SLAM</li></ul>  |   |

## INDUSTRY EXPERIENCE

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| <b>VisionNav Robotics USA Inc.</b><br><i>Staff Algorithm Engineer</i>                                   | Apr. 2025 - Present<br><i>Acworth, GA</i>     |
| <ul style="list-style-type: none"><li>• 3DGS-Aided SLAM, LiDAR-Inertial-Visual Odometry, SLAM</li></ul> |   |
| <b>VisionNav Robotics USA Inc.</b><br><i>Algorithm Engineer Intern</i>                                  | Dec. 2024 - Mar. 2025<br><i>Acworth, GA</i>   |
| <ul style="list-style-type: none"><li>• LiDAR-Inertial Odometry, SLAM</li></ul>                         |   |
| <b>Mitsubishi Electric Research Laboratories (MERL)</b><br><i>Research Intern</i>                       | Jan. 2023 - Apr. 2023<br><i>Cambridge, MA</i> |
| <ul style="list-style-type: none"><li>• Sensor Fusion, State Estimation, SLAM</li></ul>                 |   |

## ACADEMIC SCHOLARSHIPS AND AWARDS

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- **Fellowship:** 2021-2022 UCR Dean's Distinguished Fellowship Award
- **Travel Award:** 2024 ACC Student Travel Award
- **Travel Award:** 2023 CCTA Student Travel Award

## TEACHING EXPERIENCE

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**University of California, Riverside**

*Teaching Assistant*

Sep. 2022 - Dec. 2024

*Riverside, CA*

- Fall 2024: EE005 Circuits and Electronics (Undergraduate Course)
- Summer 2024: EE005 Circuits and Electronics (Undergraduate Course)
- Spring 2024: EE132 Automatic Control (Graduate Course)
- Fall 2023: EE230 Mathematical Methods for Electrical Engineers (Graduate Course)
- Summer 2023: EE005 Circuits and Electronics (Undergraduate Course)
- Spring 2023: EE132 Automatic Control (Graduate Course)
- Fall 2022: EE230 Mathematical Methods for Electrical Engineers (Graduate Course)

**Boston University**

*Teaching Assistant*

Jan. 2021 - May 2021

*Boston, MA*

- Spring 2021: EC500 Building Software (Graduate Course)

## PUBLICATIONS

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- [11] **Y. Zhang**, J. Xu and W. Ren, "PLK-Calib: Single-shot and Target-less LiDAR-Camera Extrinsic Calibration using Plucker Lines" in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hangzhou, China, Oct. 19 - Oct. 25, 2025. (Under Review)
- [10] **Y. Zhang**, D. Wang, J. Xu, M. Liu, P. Zhu and W. Ren, "NeRF-VIO: Map-based Visual-Inertial Odometry with Initialization Leveraging Neural Radiance Fields" in *IEEE International Conference on Automation Science and Engineering (CASE)*, Los Angeles, CA, USA, Aug. 17 - Aug. 21, 2025. (Under Review)
- [9] J. Xu, D. Wang, **Y. Zhang** and W. Ren, "Multi-robot Dual Reinforcement Learning Framework for Hybrid Motion Planning" in *Proceedings of the IEEE Conference on Control Technology and Applications (CCTA)*, San Diego, CA, USA, Aug. 25 - Aug. 27, 2025. (Under Review)
- [8] **Y. Zhang**, "Towards AI-Aided Multi-User AR: Cooperative Visual-Inertial Odometry Enhanced by Point-Line Features and Neural Radiance Fields" in Doctoral dissertation, University of California, Riverside, 2025.
- [7] **Y. Zhang**, M. Greiff, W. Ren and K. Berntorp, "Distributed Road-Map Monitoring Using Onboard Sensors" in *Proceedings of the American Control Conference (ACC)*, Toronto, Canada, Jul. 8 - Jul. 12, 2024.
- [6] J. Xu, P. Zhu, **Y. Zhang** and W. Ren, "Cooperative 3-D Target State Estimation and Active Tracking" in *Proceedings of the IEEE Conference on Decision and Control (CDC)*, Marina Bay Sands, Singapore, Dec. 13 - Dec. 15, 2023.
- [5] **Y. Zhang**, P. Zhu and W. Ren, "PL-CVIO: Point-Line Cooperative Visual-Inertial Odometry" in *Proceedings of the IEEE Conference on Control Technology and Applications (CCTA)*, Bridgetown, Barbados, Aug. 16 - Aug. 18, 2023.
- [4] C. Boretti, P. Bich, **Y. Zhang** and J. Baillieul, "Visual Navigation Using Sparse Optical Flow and Time-to-Transit" in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Philadelphia, PA, USA, May 23 - May 27, 2022.
- [3] **Y. Zhang**, J. Song and S. Li, "3D Object Detection and Tracking Using Monocular Camera in CARLA" in *Proceedings of the IEEE International Conference on Electro Information Technology (EIT)*, Mt. Pleasant, MI, USA, May 14 - May 15, 2021.
- [2] **Y. Zhang** and O. Alshaykh, "5G Utility Pole Planner Using Google Street View and Mask R-CNN" in *Proceedings of the IEEE International Conference on Electro Information Technology (EIT)*, Chicago, IL, USA, Jul. 31 - Aug. 1, 2020.

- [1] **Y. Zhang**, X. Wang, X. Wu, W. Zhang, M. Jiang and M. Al-Khassaweneh, "Intelligent Hotel ROS-based Service Robot" in *Proceedings of the IEEE International Conference on Electro Information Technology (EIT)*, Brookings, SD, USA, May 20 - May 22, 2019.

## PATENTS

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- [1] **Y. Zhang**, R. Duan, Z. Zhao, H. Jing, *Intelligent Tennis Ball Picking Robot and Control System*, China patent CN201820308664.8.

## PROFESSIONAL ACTIVITIES

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### Membership

- IEEE Membership
- IEEE Robotics and Automation Society Membership
- IEEE Control Systems Society Membership

### Paper Reviewer

- IEEE Robotics and Automation Letters (RA-L)
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- IEEE International Conference on Automation Science and Engineering (CASE)
- American Control Conference (ACC)
- IEEE Conference on Decision and Control (CDC)
- IEEE Conference on Control Technology and Applications (CCTA)