YANYU ZHANG

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EDUCATION

University of California, Riverside Sep. 2021 - Mar. 2025
Ph.D. in Electrical Engineering, Advisor: Wei Ren

Boston University Sep. 2019 - May 2021
M.S. in Electrical and Computer Engineering, Advisor: John Baillieul

University of Detroit Mercy Sep. 2018 - May 2019
B.S. in Robotics

Beijing University of Chemistry Technology Sep. 2015 - Jun. 2018
B.S. in Robotics

RESEARCH EXPERIENCE

University of California, Riverside Sep. 2021 - Mar. 2025
Research Assistant, Cooperative Vehicle Networks Laboratory (COVEN) *Riverside, CA*

- Cooperative visual-inertial odometry with points and lines
- NeRF-aided visual-inertial odometry
- Infrastructure-less cooperative SLAM for multi-user AR
- Extrinsic calibration between camera and LiDAR

Boston University Jan. 2020 - May 2021
Research Assistant, Boston University Robotics Laboratory *Boston, MA*

- Motion planning, Optical flow, SLAM

INDUSTRY EXPERIENCE

VisionNav Robotics USA Inc. Apr. 2025 - Present
Staff Algorithm Engineer, SLAM *Remotely*

- 3DGS-Aided SLAM, LiDAR-Inertial-Visual Odometry, SLAM

VisionNav Robotics USA Inc. Dec. 2024 - Mar. 2025
Algorithm Engineer Intern, SLAM *Remotely*

- LiDAR-Inertial Odometry, SLAM

Mitsubishi Electric Research Laboratories (MERL) Jan. 2023 - Apr. 2023
Research Intern *Cambridge, MA*

- Sensor Fusion, State Estimation, SLAM

ACADEMIC SCHOLARSHIPS AND AWARDS

- **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

University of California, Riverside   Sep. 2022 - Dec. 2024
Teaching Assistant   *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   Jan. 2021 - May 2021
Teaching Assistant   *Boston, MA*

- Spring 2021: EC500 Building Software (Graduate Course)

PUBLICATIONS

[14] B. Wu, R. Mo, J. Yue, **Y. Zhang**, J. Nguyen, G. Wu, A. Chowdhury, M. Barth and H. Qiu, "Cooper-Scene: Multi-Modal Cooperative Autonomy Benchmark with C-V2X Communication Characterization" in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Denver, CO, USA, Jun. 3 - Jun. 7, 2026. (Under Review)

[13] Y. Zhu, **Y. Zhang**, J. Xu and W. Ren, "VBGS-SLAM: Variational Bayesian Gaussian Splatting Simultaneous Localization and Mapping" in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Vienna, Austria, Jun. 1 - Jun. 5, 2026. (Under Review)

[12] D. Wang, Y. Zhu, **Y. Zhang** and W. Ren, "Expert-Augmented Distributed Multi-Agent Reinforcement Learning: Convergence Analysis and Performance Guarantees" in *Proceedings of the American Control Conference (ACC)*, New Orleans, LA, USA, May 26 - May 29, 2026. (Under Review)

[11] D. Wang, J. Xu, **Y. Zhang** and W. Ren, "Asynchronous Multi-agent Hierarchical Reinforcement Learning with Bidirectional Coupling" in *Proceedings of the American Control Conference (ACC)*, New Orleans, LA, USA, May 26 - May 29, 2026. (Under Review)

[10] **Y. Zhang**, J. Xu and W. Ren, "PLK-Calib: Single-shot and Target-less LiDAR-Camera Extrinsic Calibration using Pluker Lines" in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hangzhou, China, Oct. 19 - Oct. 25, 2025.

[9] **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.

[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

[1] **Y. Zhang**, R. Duan, Z. Zhao, H. Jing, *Intelligent Tennis Ball Picking Robot and Control System*, China patent ZL201820308664.8.

PROFESSIONAL ACTIVITIES

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)

- IEEE Transactions on Control Systems Technology (TCST)

- American Control Conference (ACC)

- IEEE Conference on Decision and Control (CDC)

- IEEE Conference on Control Technology and Applications (CCTA)