

Jiawei Mo

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WORK EXPERIENCE

Amazon - Applied Scientist II

Bellevue, WA | 06/06/2022 - Present

- Amazon Nova
 - Led large-scale AI-based video analysis for Nova video understanding and generation
 - Developed video super-resolution models; conducted diffusion model distillation for improved efficiency
- SLAM
 - Extended VIO to rolling shutter cameras, reducing ATE by 99.8% (orientation) and 94.6% (position)
 - Enabled robust VIO dynamic initialization with $<1^\circ$ gravity direction error and $\sim 1\%$ velocity error
 - Improved VIO computational efficiency by 50% via algorithmic and implementation optimizations
- Smart Home Monitoring (Ongoing)
 - Building a smart home monitoring assistant with natural language interaction using generative AI models
 - Developing an autonomous home-patrolling drone with advanced SLAM techniques

Waymo - Perception R&D Intern

Mountain View, CA | 05/26/2020 - 09/04/2020

- Developed a real-time EKF-based sensor fusion algorithm for IMU, cameras, and LiDAR for online calibration
- Achieved 0.005° orientation error for LiDAR-camera calibration
- Automated a previously labor- and time-intensive manual calibration process before each deployment

Facebook Reality Labs - Research Intern

Redmond, WA | 06/03/2019 - 08/23/2019

- Developed a simulation environment for visual-inertial SLAM research
- Synthesized 3D trajectories and IMU data using B-splines
- Generated photorealistic video sequences with advanced rendering techniques and datasets

University of Minnesota, Twin Cities - Graduate RA/TA

Minneapolis, MN | 05/29/2017 - 05/29/2022

- Graduate RA: Conducted SLAM and sensor fusion research in the Interactive Robotics and Vision Lab
- Head TA: Led courses in C++, linear algebra, data structures and algorithms, and robotics

TempWorks Software - Software Management Trainee

Bloomington, MN | 12/22/2014 - 05/08/2015

- Developed a CRM software for staffing management using Meteor and MongoDB

EDUCATION

- **Ph.D.** (05/2022), **M.S.** (11/2019), **B.S.** (05/2015), Computer Science, University of Minnesota, Twin Cities

PUBLICATION

First Author

- | | |
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| • <i>Towards a Fast, Robust and Accurate Visual-Inertial Simultaneous Localization and Mapping System</i> | Dissertation |
| • <i>Continuous-Time Spline Visual-Inertial Odometry</i> <ul style="list-style-type: none">◦ A VIO system with state-of-the-art accuracy while providing continuous-time pose estimation | ICRA 2022 |
| • <i>IMU-Assisted Learning of Single-View Rolling Shutter Correction</i> <ul style="list-style-type: none">◦ A neural network that improved rolling shutter correction accuracy by 10% | CoRL 2021 |
| • <i>Fast Direct Stereo Visual SLAM</i> <ul style="list-style-type: none">◦ A SLAM system with state-of-the-art accuracy and 2x faster than ORB-SLAM2 | RA-L 2021 |
| • <i>A Fast and Robust Place Recognition Approach for Stereo Visual Odometry Using LiDAR Descriptors</i> <ul style="list-style-type: none">◦ A place recognition approach 2x more accurate and 20x faster than BoW | IROS 2020 |
| • <i>Extending Monocular Visual Odometry to Stereo Camera Systems by Scale Optimization</i> <ul style="list-style-type: none">◦ A stereo VO system robust in challenging environments and 3x faster than using stereo matching | IROS 2019 |

Co-Author

- | | |
|---|------------------|
| • <i>Robot-to-Robot Relative Pose Estimation using Humans as Markers</i> | AuRo 2021 |
| • <i>Design and Experiments with LoCO AUV: A Low Cost Open-Source Autonomous Underwater Vehicle</i> | IROS 2020 |

PATENT

- **US Patent 10872246B2**: Lane marker recovery under occlusion (e.g., snow) using multi-view geometry.

REVIEWER

IROS (2017-2022, 2024), **ICRA** (2020-2022, 2024), **RA-L** (2021-2022, 2024), **CoRL** (2022), **COINS** (2022), **NeurIPS** (2025)