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° gravity direction error and ~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

- *Towards a Fast, Robust and Accurate Visual-Inertial Simultaneous Localization and Mapping System*	**Dissertation**
- *Continuous-Time Spline Visual-Inertial Odometry*	**ICRA 2022**
○ A VIO system with state-of-the-art accuracy while providing continuous-time pose estimation	
- *IMU-Assisted Learning of Single-View Rolling Shutter Correction*	**CoRL 2021**
○ A neural network that improved rolling shutter correction accuracy by 10%	
- *Fast Direct Stereo Visual SLAM*	**RA-L 2021**
○ A SLAM system with state-of-the-art accuracy and 2x faster than ORB-SLAM2	
- *A Fast and Robust Place Recognition Approach for Stereo Visual Odometry Using LiDAR Descriptors*	**IROS 2020**
○ A place recognition approach 2x more accurate and 20x faster than BoW	
- *Extending Monocular Visual Odometry to Stereo Camera Systems by Scale Optimization*	**IROS 2019**
○ A stereo VO system robust in challenging environments and 3x faster than using stereo matching	

Co-Author

- *Robot-to-Robot Relative Pose Estimation using Humans as Markers*	**AuRo 2021**
- *Design and Experiments with LoCO AUV: A Low Cost Open-Source Autonomous Underwater Vehicle*	**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), **CVPR** (2026)