Jiawei Mo

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WORK EXPERIENCE

Amazon - *Applied Scientist II* Bellevue, WA | 06/06/2022 - Present

- Amazon Nova Reel Video Generation
  - Large-scale data processing, video generation, spatial-temporal super-resolution, diffusion model distillation
- SLAM
  - Extended VIO for rolling shutter cameras, reduced ATE by 99.8% (orientation) and 94.6% (position)
  - Enabled VIO initialization under dynamic motion with sub-degree gravity direction error and ~1% velocity error
  - Improved VIO computational efficiency by 50% through algorithm and implementation optimization
- AI-powered Virtual Guard for Home Security Monitoring
  - Designed VLM systems to generate surveillance footage descriptions and real-time alerts
  - Enabled natural language interaction by building a RAG system

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
- Reduced deployment prep time for calibration from hours to a few minutes

Facebook Reality Labs - *Research Intern* Redmond, WA | 06/03/2019 - 08/23/2019

- Built a SLAM simulation environment generating trajectories and IMU data via B-splines
- Rendered photorealistic sequences using the Replica dataset for visual-inertial SLAM research and development

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 and continuous-time pose representation
- *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 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. *(IROS 2017 Poster)*

REVIEWER

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