Timothy Devon **Morris**

Perception Engineer · Applied Mathematician · Roboticist

Blacksburg, Virginia

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Summary

Hungry for opportunities to tackle tough perception problems, such as lifelong SLAM and autocalibration. Strong desire to produce systems that deliver value through exceptional user experience. Track record of transforming proof-of-concepts with into robust, lasting solutions.

Skills & Technologies

Programming Languages

- Rust
- C++17
- Python
- Bash
- Lua

Technologies

- Git
- Linux
- OpenCV
- ROS
- GTSAM

Concepts

- State Estimation & Tracking
- Graph-Based Probabilistic Modeling
- Multi-modal Sensor Calibration
- SLAM
- Computer Vision and 3D Reconstruction

Work Experience

Tangram Vision

Remote

Sensor Perception Engineer

Jan 2023 - Present

- Expanded core calibration IP – MetriCal – to LiDAR and IMU modalities, closing 4 customer contracts
- Designed a bespoke LWIR camera calibration solution for customer realizing $100k in professional services revenue
- Implemented M-Estimation in MetriCal improving the robustness of MetriCal
- Implemented B-Splines on Lie Group manifolds for continuous-time estimation
- Implemented many geometric camera models in MetriCal
- Led perception team in designing and implementing AutoCalibration solution
- Implemented IMU Preintegration in MetriCal
- Authored several technical blogposts increasing traffic to website by 50% and inbound leads by 25%
- Maintained, developed and shipped Rust code directly to paying customers
- Obsessed over quality of software – wrote comprehensive documentation, extensive tests, and beautiful commit messages
- Communicated with asynchronous, remote team authoring dozens of technical PRDs and RFCs

Torc Robotics

Blacksburg, Virginia

Tech Lead - Sensors & Calibration Software

October 2020 - December 2022

- Delivered calibration toolset saving the business $2.5 million in operating costs annually
- Designed and implemented factor-graph based LiDAR to IMU calibration tool
- Lead two teams in developing a technical solution to the multi-modal calibration problem
- Hired, mentored and onboarded 5 engineers

Aurora Flight Sciences

Cambridge, Massachusetts

Autonomy Engineer

May 2019 - October 2020

- Implemented distributed C++ services to perform conflict detection and resolution for detect & avoid applications
- Deployed detect & avoid system to software-in-the-loop and processor-in-the-loop simulations

Education

Georgia Institute of Technology

Remote - Part Time

M.S. in Computer Science – 4.0 GPA

Aug 2020 - Dec 2023

- Implemented unsupervised depth-from-mono and visual odometry neural network for final project

Brigham Young University

Provo, Utah

M.S. in Electrical Engineering – 4.0 GPA

April 2017 - August 2019

- Researched Handoff Problem for UAS
- Researched Monte-Carlo Tree Search for UAS tasks

Brigham Young University

Provo, Utah

B.S. in Applied and Computational Mathematics – 3.94 GPA

Sept 2011 - April 2017