Tom Sloan
Robot Vision Engineer
https://github.com/Tom-Sloan || LinkedIn/tomsloan7 || www.tom-sloan.com
Willing to relocate

Education

Master of Applied Science in Electrical and Computer Engineering
Thesis: Indoor 3D Modeling Using Consumer Drones and Neural Simultaneous Localization and Mapping (SLAM) for Virtual Reality and a Cloud Architecture
Carleton University, Ottawa
Defending November 2025

B.Eng. in Computer Systems Engineering (with Distinction)
Carleton University, Ottawa
2022

Papers

T. Sloan, B. Wallace, and R. Goubran, "**System for Drone-Based Indoor Mapping for Augmented Reality**," *in Proc. 2025 IEEE Int. Instrum. and Meas. Technol. Conf. (I2MTC)*, Ottawa, Canada, May 2025, accepted for publication.

T. Sloan, B. Wallace, and R. Goubran, "**Indoor 3D Reconstruction for Augmented Reality Using a Consumer Drone and a Cloud Architecture**," submitted for publication in *Proc. 2025 IEEE Sensors Applications Symposium (SAS)*, July 2025.

Thesis (Expected Graduation May 2025)
- Modular, cloud-assisted SLAM framework that enables fully autonomous indoor mapping and navigation with a low-cost consumer drone.
- Trained in a custom Unity-based simulator, relying solely on a standard RGB camera and IMU for visual-inertial odometry.
- Near real-time 3D reconstruction, streaming high-fidelity maps to an augmented reality (AR) headset for on-the-fly visualization and monitoring.

Work Experience
Researcher, Carleton University   *2018-2021 & 2023 to present*
- Led the design and testing of a real-time indoor 3D mapping system that uses a consumer drone (DJI Mini 3), integrating a monocular camera and IMU with a cloud-based SLAM framework for augmented reality (AR) applications.
- Implemented a modular software architecture (using Docker, RabbitMQ, and React.js) to offload high-computation tasks (SLAM, 3D reconstruction) to a remote server, enabling real-time visualization on both desktop and AR headsets.
- Collaborated cross-functionally with faculty, graduate students, and industry partners to synthesize research findings, publish peer-reviewed papers, and guide the continuous improvement of both health-monitoring and UAV-based mapping systems.
- Designed and built prototype hardware systems for non-invasive monitoring of key health markers (e.g., heart rate, respiration rate, body fluid flow) in older adults, focusing on low-cost sensor integration and data acquisition.

DevOps Engineer, Magnet Forensics   *2022 – 2023*

- Worked in a small team environment using a variety of Dev-Ops tools including Jenkins, Linux, Python and Powershell to help manage thousands of software builds a day on dozens of on-premise servers.
- Helped with the migration from on-premise to AWS cloud using CloudFormation and EC2 using the knowledge gained from doing AWS Certifications.

Spectrum Engineering Co-Op, Telesat Canada   *2020 - 2021*

- Made an alternative user interface and API in python to interact with MATLAB giving the ability to directly use satellite XML data given by the satellite operators without requiring expensive MATLAB add-ons.
- Wrote extensive amounts of tests and code to analysis satellite spectrum use. This allowed the further analysis of various international regulations tests such as regulation 1503 from the International Telecommunication Union

Certifications

AWS Certified Security – Specialty	October 2022
AWS Certified SysOps Administrator – Associate	May 2022
AWS Certified Solutions Architect – Associate	January 2022
AWS Certified Developer – Associate	February 2022
AWS Certified Cloud Practitioner	July 2020
Canadian Securities Course	September 2018

Independent Projects

Smart Home, *C, C++, Pytorch, CAD, PCB Design, AWS, Firebase*
Smart Band Project, *C, C++, Python, CAD, PCB Design, AWS, MATLAB*
Portfolio Website, *React, Redux, JavaScript, HTML, Sass*
Twitter Bot, *Python*
Details of the projects can be found at www.tom-sloan.com/projects