Paul Bovbel

Robotics Autonomy Architect & Engineering Director

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Engineering leader with 12+ years of experience building and deploying autonomous robotic systems at scale. Experienced in guiding the design and evolution of autonomy stacks spanning perception, planning, controls, and fleet infrastructure for large deployments of mobile robots operating in production environments.

Currently lead multiple robotics software engineering teams at Locus Robotics and serve as autonomy architect for the company's mobile robot platform. My work focuses on translating complex robotics technologies into reliable production systems through modern software development practices in observability, metrics, testing, and tooling.

Technical Skills

I've had the opportunity to explore various technologies, and I have substantial experience with:

- C++
- Python
- Java (EE, Android)
- ROS1, ROS2, Gazebo and friends
- OpenCV and PCL
- Linux, systemd, and bash
- Docker, LXD, Ansible
- Jenkins and Github Actions
- PostgreSQL
- AWS

Employment

Locus Robotics - Boston, MA (Remote)

Director, Robotics Autonomy, *May 2025 - Present*

Senior Manager, Robotics Autonomy, *Nov 2024 - May 2025*

- Lead multiple engineering teams responsible for navigation, perception, mapping, and localization across Locus' autonomous mobile robot platform.
- Drive autonomy roadmap, technical strategy and architecture for large fleets of robots operating in high-throughput warehouse environments.
- Champion engineering practices around observability, metrics, reliability testing, and CI/CD for safety-critical robotic software.

Principal Robotics Software Engineer, Planning and Controls Team Lead, *May 2023 - Nov 2024*
Staff Robotics Software Engineer, Planning and Controls Team Lead, *June 2021 - May 2023*

- Led development of robot navigation systems including path planning, behavior orchestration, and trajectory optimization.
- Managed a team delivering autonomy capabilities for dense fleets operating in dynamic human environments.
- Delivered three new autonomous mobile robot platforms in two years, meeting strict operational reliability and safety requirements.

Staff Robotics Software Engineer, Platform Team Lead, *May 2019 - June 2021*
Senior Roboticist, *March 2017 - May 2019*

- Founded and scaled the robotics platform infrastructure team, responsible for CI/CD, developer tooling, cloud infrastructure, and fleet software deployment.
- Built systems for crash reporting, monitoring, remote diagnostics, and automated software rollout to production robots.
- Implemented build and release pipelines enabling reliable deployment of robotics software to thousands of robots.

Clearpath Robotics – Kitchener, ON

Senior Software Engineer, *Mar 2016 - Mar 2017*
Software Engineer, *Nov 2014 - Mar 2016*

- Designed and simulated a mission scheduling, execution, and monitoring system for fleets of autonomous mobile robots in factory environments.
- Developed software drivers, demos, and documentation for research robot platforms (e.g., Husky).
- Developed control, autonomy, and simulation software for quadcopter swarm research (UAV Lab).

Projects

I've contributed to many projects within the ROS ecosystem, but I'm particularly proud of my work on:

- frontier_exploration - a pluggable exploration system on top of the ROS1 navigation stack.
- aiorospy - a library to interface with ROS1 from within Python 3's asyncio framework.
- catkin_virtualenv - an infrastructure package to allow bundling a whole virtualenv of dependencies together with a ROS1 package.
- tailor - a turnkey CI system to quickly build large ROS1/2 distributions.
- vrpn_client_ros - a component to interface VRPN-compatible MOCAP systems with ROS1.
- perception_pcl/pointcloud_to_laserscan - pointcloud library bridge into ROS1/2.

Education

Master of Applied Science, Mechanical Engineering, University of Toronto, 2012 - 2015.

- As a Graduate Research Assistant, developed multiple robotic platforms for research use (see Casper, MARP, and Moverbot).

Bachelor of Applied Science, Mechanical Engineering, University of Toronto, 2006 - 2011.

Publications, Patents, Talks

- "Tailor CI: How Locus Deploys Robots At Scale", ROSCon, Macau, *2019*. [video]
- Clearpath Robotics Patent US20190243384A1, "Communication Systems for Self-Driving Vehicles, and Methods of Providing Thereof", *2019*. [patent]
- Clearpath Robotics Patent US20180276595A1, "Systems and methods for autonomous lineside parts delivery to an assembly line process", *2018*. [patent]
- Bovbel, P., "A Person-search System for an Assistive Robot", Thesis, *2015*. [pdf]
- Bovbel, P. and Nejat, G., "Casper: An Assistive Kitchen Robot to Promote Aging in Place", Journal of Medical Devices, Transactions of the ASME, *2014*. [pdf]