

Paul Bovbel

Robotist and Software Engineer

Kitchener, Ontario, Canada

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<http://www.bovbel.com/resume.html>

I have experience bringing a number of robotic systems from prototype to production. I value building complex things in a sensible fashion, and helping designs scale and grow - whether as physical robots, or cloud instances. I also enjoy the force multiplier of working with open source software and its community.

I currently work remotely from Kitchener, and I am authorized to work in the US via TN visa.

TECHNICAL SKILLS

While I've had a chance to explore many technologies, I've done a non-trivial amount of work with:

- C++ (Classical, Modern, and Boost)
- Python
- Java (EE and Android)
- ROS, Gazebo and friends
- OpenCV and PCL
- Linux, systemd, and bash
- Docker and LXD
- Jenkins and Travis
- RDBMS (PostgreSQL)

EMPLOYMENT

Locus Robotics - Wilmington, MA

Staff Software Developer, Platform Team Lead, *May 2019 - Present*

Senior Robotist, *March 2017 - May 2019*

- Created an inter-robot communication system for robust, real-time communication within large fleets of logistics autonomous mobile robots.
- Developed a 3D perception pipeline for stereo cameras, managing noise and false positive detections.
- Designed a hermetic CI/CD system to enable rapid iteration and testing across hundreds of repositories while maintaining release quality.
- Refactored and redesigned the robot bringup, execution, and monitoring systems for reliability and maintainability.
- Ironed out the peculiarities of Linux and ROS for development and production.

Clearpath Robotics - Kitchener, ON

Senior Software Engineer, *Mar 2016 - Mar 2017*

Software Engineer, *Nov 2014 - Mar 2016*

- Designed a mission scheduling, execution, and monitoring system for fleets of autonomous mobile robots in a factory environment.
- Created tools for multi-robot simulation and testing of autonomy systems.
- Modernized and maintained drivers, demos, and documentation for research robot platforms (see [Husky](#)).
- Developed a suite of control, autonomy, and simulation software for quadcopters swarm research (see [UAV Lab](#)).

Univeris Corporation – Toronto, ON

Software Engineer, *June 2014 - November 2014*

- Developed a document and report templating engine for an enterprise wealth management system.

Autonomous Systems and Biomechatronics Lab – University of Toronto, ON

Graduate Research Assistant, *September 2012 - May 2014*

- Designed and prototyped (mechanics, electronics, and software) of multiple robotic test-beds for research, fun, and profit (see [Casper](#), [MARP](#), and [Moverbot](#)).

Projects

I've contributed to many projects within the ROS ecosystem, but I'm particularly proud of having developed:

- [catkin_virtualenv](#) - an infrastructure package to allow bundling PyPI dependencies together with ROS packaging artifacts.
- [tailor](#) - a turnkey CI system to quickly build large ROS distributions.
- [aiorospy](#) - a library to interface with ROS1 from within Python 3's asyncio framework.
- [frontier_exploration](#) - a pluggable exploration framework on top of the navigation stack.
- [vrpn_client_ros](#) - a component to interface VRPN-compatible MOCAP systems with ROS1.

Education

- Masters of Applied Science, Mechanical Engineering, University of Toronto, 2012 - 2015.
- 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](#)]

Personal Interests

I enjoy volunteering with FIRST Robotics, dinghy sailing, guitars, [3D printing](#), backcountry canoeing, cycling, and board games.