

Ben Blumer

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SUMMARY

Robotics software engineer focused on perception, calibration, manipulation, vision-guided robotics, and motion planning. Technical cofounder of VC-backed automation startup, ShapeMeasure.

SKILLS

- Languages: C++, Python
- Robotics: ROS, calibration (hand-eye, stereo), motion planning/kinematics
- Perception: OpenCV, stereo vision, calibration, point cloud processing, sensor fusion
- Systems/Tools: Linux, Docker, Git, CI/CD, simulation (Gazebo, RViz)
- Prototyping: software / firmware / mechanical / electrical / sensors / actuators, CAD (Fusion 360), rapid bring-up/testing

EXPERIENCE

Reify Robotics, Vancouver — *Consultant 2024–Present*

- Built a dockerized ROS-based development environment and RViz simulation with local/remote networking to streamline mobile robot development and to visualize live robot and sensor data.
- Developed a smart scale with wireless data logging, currently used in the field.
- Designed and delivered custom hardware and software to automate industrial processes; systems are in production.

Apera AI, Vancouver — *Robotics Software Engineer 2024–2025*

- Increased (rotational) pose estimation accuracy from $\sim 10^\circ$ to $\sim 0.1^\circ$ via multi-sensor fusion, enabling higher-precision placements; developed for use at major automotive plants.
- Built a stereo vision calibration QA tool that surfaces calibration quality and enables self-serve troubleshooting, reducing unnecessary recalibration and tech-support tickets.
- Implemented grasp-aware placement that adjusts the drop-off pose based on measured grasp, improving downstream placement reliability.

ShapeMeasure, Vancouver — *Founding Robotics Engineer 2018–2023*

- Technical cofounder building automation for flooring. Our LIDAR measured the construction site and our novel CNC cut material to fit. Grew from concept to 100+ customers and $\sim \$500k$ ARR; US patent; raised $\$1M+$.
- Built a novel ROS-enabled LiDAR (sub-millimeter precision) (software, firmware, mechanical).
- Designed localization and vision algorithms to extract as-built features from point clouds for automated fabrication.
- Developed a novel CNC to cut flooring to as-built site conditions.
- Built a Django-based MRP to schedule and manage 1,000+ orders across sales, manufacturing, and logistics.

Istuary, Vancouver — *Director of Robotics 2017–2018*

- Led development of a UR5-based press-brake automation system with perception for sheet localization/grasp and motion planning for precise positioning.
- Assembled and led a robotics team, providing recruitment, training, and guidance.
- Built C++/OpenCV algorithms for precise localization and grasping of sheet material; implemented motion planning in Python.
- Developed a dockerized ROS architecture for communication between modular system components.

UBC CARIS Lab, Vancouver — *Research Assistant* — 2012–2016

- Constructed a dual-arm motion-planning controller.
- Probabilistically modeled outcomes of robot-arm trajectories to overcome sensor and actuator noise.
- Built stereo vision software to capture high frame rate 3D ball trajectories (OpenCV).
- Demonstrated precise timing, coordination, and robustness by serving a ping-pong ball.
- Built a ROS-controlled Gazebo digital twin for the controller to perform collision checking.

EDUCATION

- **University of British Columbia**, Vancouver — Master of Applied Science, Mechanical Engineering (Thesis: algorithms for two-handed coordination in robot arms), 2012–2016
- **University of Calgary**, Calgary — Bachelor of Science, Physics (First-Class Honours); Minor in Applied Mathematics, 2006–2011

OPEN SOURCE CONTRIBUTIONS

- WAM ROS Support — github.com/BenBlumer/catkin-barrett-ros-pkg. Update enabling newer ROS versions to control the WAM robot arm; recommended by Barrett technical support.
- Gazebo WAM — github.com/BenBlumer/Gazebo_WAM. Gazebo simulation of a WAM robot arm with ROS control.
- ROS: gazebo_ros_pkgs — github.com/ros-simulation/gazebo_ros_pkgs (commit: da23a04). Bug fix enabling ROS to interact with Gazebo simulations.
- AirAPI_Windows — github.com/MSmithDev/AirAPI_Windows (commit: 6eefc81): added support for the new model of Xreal augmented reality glasses to an open-source driver.
- Additional contributions: Right Hand Robotics Reflex driver (build fix); Point Grey Camera ROS driver (stereo vision for GH3); Kinect 2 skeleton tracking (build fix).

AWARDS

- US Patent: System and method for automating construction and installation of surfaces in construction (US11332942B2).
- Best Paper (of 100+) — Human-Robot Interaction (HRI). “Human—Meet Me Where I'm Gazing: How Shared Attention Gaze Affects Human-Robot Handover Timing.”
- Third place (of 150+) — Canadian Undergraduate Physics and Astronomy Conference. Oral presentation: “The Numerical Computation of Single-Qubit Gates Implementable Through Quantum Walks on Graphs.”