Brad Saund PhD

I am a Staff Applied Scientist and Robotics Engineer with 10+ years of experience building autonomous systems, robotic evaluation frameworks, and planning algorithms.

Work Experience

2022–present **Staff Applied Scientist**, *Cruise*, San Francisco.
- I designed and implemented the evaluation strategy that ensures our autonomous vehicle metrics are understood by our users. This has become the backbone of how Cruise/GM evaluates AV performance. I served as tech lead, initially as a sole developer and grew the team to 39 contributors, 25 of which were outside my org. This system involves C++ and Python metrics, a library for SQL queries, and a suite of frontend streamlit dashboards.
- I led a workstream pioneering a new evaluation strategy of our autonomous vehicles based on comparison to a human reference. This workstream grew the strategy from an initial concept into Cruise's primary method of end-to-end evaluation. We now run over 2 million simulations a week using this method.
- I built and deployed planning algorithms to over 300 production autonomous vehicles. Algorithms included classical graph search, hand-tuned cost functions modeling reachability and uncertainty using vehicle dynamics, and feature engineering for ML costs. Implementations were in C++ and CUDA.

2021–2022 **SDE II**, *AWS Robotics*, Sunnyvale.
- I founded a small team prototyping a new AWS robotics service. I conducted customer interviews, prototyped a robotic arm picking system, wrote and presented a PRFAQ to Amazon VPs.

2014–2015 **SDE**, *Amazon*, Seattle.
- I supported ad deployments to Kindle E-readers and tablets.

2012–2014 **Robotics Engineer**, *Electroimpact*, Seattle.
- I designed, built, and programmed robots that build airplanes.

Education (BS, MS, PhD in Robotics)

2017–2021 **PhD Robotics**, *University of Michigan*.
Path planning for manipulation

2015–2017 **MS in Robotics**, *Carnegie Mellon*.
Path planning and precision localization in confined spaces

2008–2012 **BS Mechanical Engineering**, *Caltech*.

Skills

Programming ROS, TensorFlow, PyTorch, OpenCV, C++, Python
Deployment Supporting a planning stack deployed to 300 autonomous vehicles, requiring responses to SEVs
Robotics Path Planning with Uncertainty, Sensor Fusion, Localization, Autonomous Vision and Navigation

Selected Publications (see www.bradsaund.com for a complete list)

2021 **Brad Saund** and Dmitry Berenson "CLASP: Constrained Latent Shape Projection for Refining Object Shape from Robot Contact", CoRL

2020 **Brad Saund** and Dmitry Berenson "Diverse Plausible Shape Completions from Ambiguous Depth Images", CoRL

2019 **Brad Saund**, Sanjiban Choudhury, Siddhartha Srinivasa and Dmitry Berenson "The Blindfolded Robot: A Bayesian Approach to Planning with Contact Feedback", ISRR

2017 **Brad Saund** "Planning and Localizing under Contact Uncertainty", Carnegie Mellon Master's Thesis

2013 **Brad Saund** and Russell DeVlieg. "High Accuracy Articulated Robots with CNC Control Systems", 2013 SAE-Aerotech

San Carlos, CA

📱 *+1 (650) 787 4726* • ✉ *brad.saund@gmail.com* • 🌐 *www.bradsaund.com*