# GRISWALD BROOKS

Senior Robotics Engineer


(347) 638 3633

griswaldbrooks.com

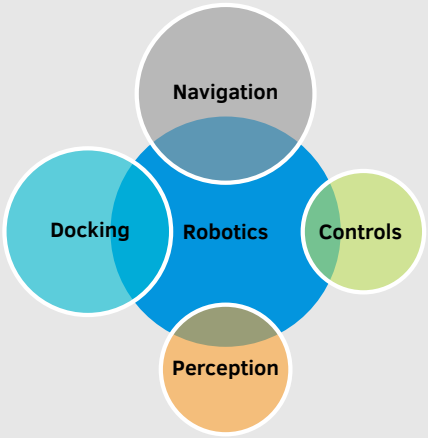
griswald.brooks@gmail.com

in/griswaldbrooks

griswaldbrooks


## Technical Skills

### Overview




### Programming

C++

Python

Javascript

## Education

**MSc., Electrical Engineering**
NYU School of Engineering
May 2015 | Brooklyn, NY

**BSc., Computer Engineering**
NYU School of Engineering
May 2013 | Brooklyn, NY

## Experience

May 2018 - Present **Senior Robotics Engineer** — Bossanova Robotics

- Led navigation stack refactor, improving test coverage and code quality. Formalized ROS-less programming strategies, producing faster and more robust tests.
- Migrated next generation robot to more robust local planner, avoiding robot stuck situations and allowing navigation closer to obstacles.
- Solved navigation field issues stemming from costmap race conditions, lingering state, goal mismatches, and trajectory critics. This supported the scaling of the fleet from 50 to 350 robots.
- Designed and implemented navigation traceability and observability monitors enabling engineers to get targeted bag data of an event quickly, obviating the large downloads and manual correlation previously required.
- Built ground truth label collection system, used to compare results to robot scans for experimental label detector. Reduced collection time from 30 to 8 minutes per aisle, requiring only one operator from two.
- **Used**: TOF/LIDAR, C++, Python, ROS, Git, Gtest, Jenkins, inOrbit, Optitrack

Jul 2016 - May 2018 **Robotics Software Engineer** — Neato Robotics

- Improved docking reliability and added features. Refactored infrastructure producing documented unit tested code.
- Evaluated multiple tof/stereo cameras for technology selection.
- Led automated on-robot testing project. Built infrastructure for test fleet command and monitoring. Performed team level release engineering duties. Released builds to SQA, beta testers, and production.
- **Used**: TOF/LIDAR, C++, Python, JS, QNX, Git, Jenkins, AWS, Catch2

Jul 2015 - Apr 2016 **Robotics Engineer** — Fetch Robotics

- Developed EKF/LIDAR based tracking of people and mobile robots.
- Increased robustness of charge docking system through improvements in perception, navigation, and recovery behaviors.
- **Used**: ICP, EKF, C++, Python, ROS, Git, Gtest, LIDAR

## Research

Jan 2014 - 2015 **Graduate Research Assistant** — Control/Robotics Research Lab at NYU

**Thesis**: Projected Profile Humanoid Crawl Gait and Lidar Based Navigation using GODZILA

- Developed novel inverse kinematics crawling gait and potential field navigation using LIDAR/Nao; gradient descent-based IK solver for out-of-workspace end effector poses; LIDAR-based object detection/classification regressors.
- **Used**: IK, Optimization, Potential Fields, Linear Regression, C++, Matlab, Python, LIDAR, Sonar, Nao

## Publications

G. Brooks, P. Krishnamurthy and F. Khorrami, **"Low-profile crawling for humanoid motion in tight spaces"**, Intelligent Robots and Systems (IROS), 2015 IEEE/RSJ International Conference on, Hamburg, 2015, pp. 5930-5935. G. Brooks, P. Krishnamurthy and F. Khorrami, **"A multi-gait approach for humanoid navigation in cluttered environments"**, The 26th Chinese Control and Decision Conference (2014 CCDC), Changsha, 2014, pp. 2708-2713. G. Brooks, P. Krishnamurthy and F. Khorrami, **"Humanoid robot navigation and obstacle avoidance in unknown environments"**, Control Conference (ASCC), 2013 9th Asian, Istanbul, 2013, pp. 1-6.