Samuel Struthers **Title**

Robotics Engineer · Software Developer · DevOps Engineer

(+1) 919-710-5430 samstitle@gmail.com samtitle.com github.com/sstitle linkedin.com/in/sam-title-380722107

Skills

Languages	**Python, C++, Go, TypeScript, Shell, JavaScript, C, Verilog**
Frameworks	**AWS, Pulumi, Terraform, gRPC, ROS, Qt, MFC, React**
Technologies	**Distributed microservices, event-driven and multithreaded models, client-server architecture, TCP/IP sockets, relational and non-relational databases**
Tools	**Git, CMake, Docker, Bazel, Protobuf, GDB, GCC, Clang, MSBuild, Valgrind, UML, LATEX, Adobe Creative Cloud, OnShape**

Experience

Dirac — *Manhattan, NY*

Senior Software Engineer — *August 2023 - December 2025*

- **BuildOS:** Developed Python and C++ infrastructure for physics simulation of mechanical rigid body disassembly.
- Developed distributed microservices architecture using gRPC in Go, TypeScript, Python, and C++.
- Integrated a new CAD kernel, enabling colored output in the JavaScript front-end, and added support for 3 additional CAD formats.
- Achieved 5x faster C++ build times using Nix, CMake, Ninja and sccache.
- Developed public API implementation for our web SaaS product enabling enterprise customer engagement with OpenAPI and Go.
- Implemented continuous integration stages for code formatting, linting, unit testing, integration testing and deployment with GitHub actions.
- Championed team migration from Gitflow to trunk-based development leading to release cycles going from 3 months to 2 weeks.
- Maintained live servers with AWS Cloud infrastructure using Lambda, EC2, S3, and DynamoDB.

Nanotronics — *Brooklyn, NY*

Senior Software Developer — *June 2022 - June 2023*

- **Modular Autoloader:** Developed flexible architecture for implementing new equipment front-end modules for semiconductor manufacturing.
- Wrote C++ abstractions for robots and sensors used in an AI defect analysis system for microscopic inspection of various substrate materials.
- Integrated sample-handling robots, external motors, pneumatic components, sensors, and other controls for a microscopic scanning system.
- Contributed to 4 new product releases with more than 12 new networked hardware components for handling silicon wafers, semiconductor devices, glass and copper panels, and biological specimens.
- Supported microscope stage size of 650 mm x 650 mm, precisely controllable to 1 µm.

Realtime Robotics — *Boston, MA*

Robotics Engineer → Senior Software Engineer — *July 2018 - February 2022*

- **RapidPlan Create:** Developed 2.0 version of the company's core robot motion-planning product which streamlined the user workflow and increased the modeling accuracy of our state-of-the-art collision checking technology.
- **RapidSense:** Developed a GUI for performing extrinsic and intrinsic calibration of multiple RGBD cameras relative to a robotic arm to generate voxel images. Enabled visualization of voxel images accurate to the centimeter at a resolution of 128^3 at 10Hz.
- **World Builder:** Developed a point-and-click robot workstation modeling prototype. Integrated differential evolution AI algorithm for optimizing robot workcells imported from 3rd party applications. Curated a database of over 60 different robot models from 7 different OEMs.
- Implemented architectural improvements which scaled our system from supporting control of only up to 4 robots to control of up to 16 robots. Optimized memory size of saved project data by enabling implicit sharing on key classes. Achieved a 2-16x reduction in the number of user workflow steps for multi-robot work cells.

Education

Brown University — *Providence, RI*

Bachelor of Science in Computer Engineering — *Class of 2018*

Courses: Design of Robotic Systems, Collaborative Robotics, Industrial Machine Vision, Design of Computing Systems, Instrumentation Design, Communication Systems, Digital Signal Processing