DEREK SMITH

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Experience

Systems Software Exploration & Open Source Contributions **Jan 2026 – Present**
Sabbatical *Crestone, CO*

- Taking a planned technical and personal sabbatical focused on modern systems programming in Rust, decentralized networks, and compiler design.
- Contributed documentation, unit tests, and code fixes to open-source local-first and P2P projects including Holochain, Automerge, and Iroh.

Senior Software Engineer & Technical Lead - Developer Tooling **Jul 2023 – Dec 2025**
nVoq Inc. *Boulder, CO*

- Developed a Python package with C++ extensions (via pybind11) for speech modeling, reducing model compilation times by 80% and simplifying data science workflows.
- Migrated on-prem build systems to containerized AWS infrastructure using Docker, GitLab CI/CD, and Jenkins, improving build reliability by 4x.
- Maintained complex Thrax grammars compiled to OpenFst finite-state machines for text processing. Built a VS Code syntax highlighting extension for the grammar DSL and improved its compiler.
- Provided technical leadership for a team of five, aligned technical tasks with product owners, and authored comprehensive system documentation and multimedia tutorials to accelerate future developer onboarding.

Senior Software Engineer - High-Performance Servers **Jan 2021 – Jun 2023**
nVoq Inc. *Boulder, CO*

- Co-designed a multi-threaded Java/C++ WebSocket server (via JNI) built on Kaldi, OpenFst, and GStreamer, increasing concurrent request capacity by 20x.
- Debugged thread contention, memory leaks, and segmentation faults using Valgrind, GDB, and JProfiler.
- Developed auxiliary microservices, including a low-overhead HTTP-to-WebSocket router and an audio proxy routing service for mobile-to-desktop dictation.

Software Engineer - Systems and Automation **Jan 2018 – Dec 2020**
nVoq Inc. *Boulder, CO*

- Automated speech model builds and accuracy testing using Jenkins; reduced speech recognition error rates by 40% by training on new datasets and neural network architectures.
- Developed NLP prototypes in Python for corpus cleanup, text normalization, and parts-of-speech rescoring.
- Maintained legacy C++ dictation server, applying patches and managing deployments using Chef.

Contractor - Machine Learning **Sep 2016 – Dec 2017**
nVoq Inc. + Colorado School of Mines *Boulder, CO*

- Implemented a speech spectrogram phoneme classifier in Torch/Lua, adapting it as a semi-supervised ladder autoencoder for my Master's project.
- Prototyped a computer vision desktop automation tool utilizing OpenCV to recognize UI elements.

Projects

whipsnake

- Developing an ahead-of-time compiler in Rust targeting WebAssembly for a subset of Python; completed hand-written lexical analyzer, recursive-descent parser, and AST evaluator.

Education

Colorado School of Mines **Golden, CO**
MS, Computer Science Jan 2017 – Dec 2017
BS, Applied Mathematics and Statistics Sep 2013 – Dec 2016

Skills

Languages: C++, Python, Rust, Bash, Java, HTML/CSS, vanilla JS
Systems & Runtimes: Multi-threading, async, real-time audio, finite-state machines, FFI, compilers, Wasm
Infrastructure: Git, GitHub, GitLab CI/CD, make, Docker, Jenkins, CMake, AWS (EC2, S3, IAM), Linux, Nix