

Alexander Trevelyan, PhD

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PROFESSIONAL SUMMARY

Software engineer with 7+ years building the instrumentation and data pipelines that power cutting-edge genomics and biotech hardware. Proven track record of dramatic performance wins—from 10x pipeline speedups to 5x compute cost reductions—across Next-Gen Sequencing and single-cell imaging. Equally at home building interactive visualization and experiment management tools, architecting high-throughput backend pipelines, and partnering cross-functionally with ML engineers and scientific teams to shorten the loop between hypothesis and insight.

TECHNICAL SKILLS

Languages: Python (NumPy, Pandas, Cython, SciKit), C# (LINQ, Reactive, TPL), C/C++, Bash

Cloud & Infra: AWS (EC2, S3, Fargate, Lambda, Terraform), Linux, Nextflow/Seqera, Docker, GitHub

AI & ML: TensorFlow, PyTorch, TensorRT

Visualization & UI: PyQt, Matplotlib, Plotly, ReactiveUI, OpenCV

Tools: Claude Code, Git, CI/CD pipelines, Jira, Confluence

WORK EXPERIENCE

Staff Software Engineer | **Glyphic Biotechnologies** | Berkeley, CA

August 2024 – March 2026 | glyphic.bio

- Architected and led migration of the primary analysis pipeline to Nextflow/Seqera on AWS, delivering a 5x+ cost reduction and 10x+ throughput improvement.
- Worked directly with the COO prior to his departure in January 2026, scoping and executing initiatives that enabled real time analysis of multi-terabyte sequencing datasets on AWS, management of 200TB+ of sequencing run data and lifecycles on S3, and networking for 10Gbps data throughput.
- Built data exploration and visualization tooling for automated QC and analysis of experimental data, partnering directly with scientists to understand needs and ship usable systems that reduced turnaround from hours to minutes.
- Developed the core experiment management application for lab prototypes, replacing ad-hoc Jupyter notebooks with a PyQt desktop application featuring async event execution and real-time visualization—enabling scientists to run complex experimental workflows independently.
- Established company-wide engineering practices on GitHub: branching strategy, CI/CD pipelines, code review workflows, and automated testing.
- Designed and deployed the end-to-end IT stack for Oxford Nanopore sequencing runs, including Linux workstation provisioning and real-time AWS integration for lab-to-cloud analysis.

Staff Software Architect | **Ruby Robotics** | San Mateo, CA

May 2024 – August 2024 | Contract • Acquired by Intuitive Surgical in 2025

- Built a high-throughput visualization application for an oncological platform in C#, streaming and synchronizing 10,000+ tissue sample images in real time using ReactiveUI and OpenCV.
- Refactored the instrument's image-capture pipeline, reducing frame-to-frame latency and improving throughput for high-speed tissue scanning.

Sr. Software Engineer | **Deepcell** | Menlo Park, CA

August 2022 – March 2024 | deepcell.com

- Lead developer of the full-stack scientific platform (C#) used daily by researchers; sole owner of extending the codebase to support three new hardware prototypes end-to-end.
- Instrumented the high-speed imaging pipeline with detailed latency profiling and memory analysis, identifying bottlenecks that yielded measurable throughput gains after optimization.
- Partnered cross-functionally with FPGA, hardware, microfluidics, and ML engineers to integrate requirements for new prototypes—translating hardware constraints into software architecture decisions.

- Designed asynchronous, reactive, multithreaded control systems for real-time cell sorting at thousands of events per second.

Sr. Software Engineer | **GenapSys** | Redwood City, CA

September 2019 – July 2022 | Company dissolved in 2022

- Key developer and owner of the primary analysis pipeline for a Next-Gen Sequencing instrument (Python); delivered 10x+ speedups through Cython optimization, vectorized computation, and modernized bioinformatics workflows.
- Productionized the basecalling neural network by building TensorRT integration from scratch, achieving up to 50% reduction in ML inference time and enabling real-time prediction during sequencing runs.
- Packaged the entire analysis pipeline into a customer-deliverable application, driving the project end-to-end from design through deployment with minimal hand-holding.
- Designed post-processing and data transformation pipelines using SAMtools, biopython, BWA, and NumPy/Cython to produce analysis-ready datasets for computational scientists and downstream ML workflows.

Sr. Scientist | **OmniPreSense Corp.** | San Jose, CA

December 2018 – September 2019 | omnipresense.com

- Developed and trained TensorFlow/Keras neural networks for multi-object tracking and classification, achieving 90%+ accuracy; owned the full ML lifecycle from data collection and model training to production deployment.

EDUCATION

University of Oregon — PhD, Physics (2018)

Loyola Marymount University — BS, Engineering Physics (2009)