

Gabriel Berger

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Stanford undergraduate in mathematics, computer science, and statistics, focused on low-level systems and high-performance computing. Recent work: a RISC-V CPU, a bare-metal WiFi driver, and a 10× HPC genomics pipeline. Looking for systems, quant-research, or research-engineering internships.

Education

Stanford University Expected 2028
Mathematics, Computer Science & Statistics · GPA 3.86 Stanford, CA
Relevant coursework: Operating Systems Design & Implementation (CS140E) · Advanced Systems (CS240LX) · Computer Systems from the Ground Up (CS107E) · Parallel Computing (CME213) · Design & Analysis of Algorithms (CS161) · Probability Theory (MATH151) · Real Analysis & Linear Algebra (MATH61CM) · Mechanics & Special Relativity (PHYSICS61) · Philosophical Foundations of Statistics (STATS200Q).

Experience

UCSF Department of Medicine, Smith Lab Jun 2025 – Present
Visiting Student Researcher San Francisco, CA

- Rebuilding a high-throughput single-cell genomics pipeline (DAB-seq v2) from scratch in modern C++17 (raw FASTQ to per-cell genotypes and antibody-marker profiles), parallelized on Slurm HPC for a 10× speedup.
- Reverse-engineered Mission Bio's undocumented Tapestry read encoding to parse the raw sequencer output directly.

Stanford Cancer Institute, Alizadeh Lab Summer 2026
Visiting Student Researcher (incoming) Stanford, CA

- Selected as one of a small cohort for the Stanford Cancer Institute summer program; characterizing Richter's transformation by comparing cell-free DNA vs. RNA liquid-biopsy signal.

Stanford University School of Medicine, Bogoy Lab 2022 – 2024
Visiting Student Researcher Stanford, CA

- Synthesized and validated peptide-based enzyme inhibitors for drug discovery; co-authored a peer-reviewed paper on anti-malarial proteasome inhibitors (ACS Infectious Diseases, 2023).

Powerset (early-stage talent firm) 2026 – Present
Stanford Lead & Software Engineer Stanford, CA

- Build software and data tooling to surface and connect with exceptional engineers across universities; lead the firm's Stanford presence.

Stanford Mathematics Department & Private Tutor 2024 – Present
Tutor: calculus, linear algebra, ODEs (sections and 1:1); original lesson materials Stanford, CA

Selected Projects

RISC-V RV32I CPU CS240LX · advised by Prof. Mark Horowitz

- Designed and implemented an RV32I processor core in RTL; compiled C programs and ran them on the CPU under Verilator. Refining the design with Prof. Horowitz toward silicon fabrication.

Bare-Metal WiFi Driver CS140E · C, ARM, SDIO

- Brought up a bare-metal WiFi driver and network stack on a Raspberry Pi (no OS): SDIO, firmware upload, and WPA2 / DHCP / UDP, reverse-engineered from Linux kernel source.

Bayesian Inference Case Study STATS200Q · statistical theory

- Worked through a Bayesian normal-precision model end to end: derived the MLE, Fisher information, asymptotics, the generalized likelihood-ratio test (Wilks), and a Metropolis-Hastings sampler.

Skills

Languages: C, C++, Python, R, Java, Bash
Systems & hardware: RISC-V, RTL / Verilog, Verilator, bare-metal / embedded, device drivers (SDIO, SPI), Linux
Parallel & GPU: CUDA, OpenMP, MPI, multithreading, Slurm / HPC
Quant & math: probability, statistical inference, Bayesian inference & MCMC, linear algebra, real analysis
Tools & bioinformatics: Git, GDB, LaTeX, single-cell / FASTQ pipelines

Publications

J. M. Bennett, ..., G. Berger, ..., M. Bogoy. "Covalent Macrocyclic Proteasome Inhibitors Mitigate Resistance in Plasmodium falciparum." [ACS Infectious Diseases](#), 2023.
Interests: Jazz alto saxophone (SFJAZZ mentee; CJC studio band) · Japanese, Spanish, Hebrew, Chinese · vipassana meditation.