Barrett Ruth

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Education

University of Virginia — Charlottesville, VA
Bachelor's of Computer Science — *Aug. 2022 – May 2026*

- **Coursework**: Advanced Algorithms, Operating Systems, Algorithmic Economics — *GPA: 3.99/4*
- **Activities**: ICPC, theCourseForum, Cavalier Autonomous Racing, HooHacks 2x Winner

Experience

Ramp — September – December 2025
Backend Software Engineering Intern — *New York City, NY*

- Developing internal bulk fraud credit card dispute processor, est. saving ≈ $100,000/yr, CX ≈ 10,000 hours/yr

DRW — June – August 2025
Software Developer Intern — *Houston, TX*

- Implemented "Exchange Equivalence," a portfolio analysis tool that hedges risk exposures of FTR trades
- Developed "Constraint Exposure", a suite of FTR arbitrage tooling
- Optimized dynamic spanning tree data structure used across all market simulation runs, saving ≈$10,000/mo

UVA Insight Computer Architecture Lab — January – May 2025
Hardware Profiling Research Assistant — *Charlottesville, VA*

- Profiled memory hierarchy of NVIDIA GH200 Superchip, specializing in large-scale GEMM

TRB Capital Management — May – August 2024
Software Engineering Intern — *Charlottesville, VA*

- Developed frameworks and algorithms for medium-frequency trading application with TWS API
- Implemented SWIG backtesting, CI with Catch2/gcov, and strategy deployment

VISA — May – August 2024
Software Engineering Intern — *Austin, TX*

- Piloted "GenAI Support Assist," automating resolution of global authentication support issues, reducing team's weekly debugging time by 8 hours and selected by Senior VP of Payment Solutions
- Sole intern to deploy to internal cloud platform CloudView, utilizing GenAI APIs (Ada-002, GPT) to poll real-time production data, storing embeddings/logs in VectorDB/MySQL, and authenticated frontend for support staff

Nth Venture Studio — February – August 2023
Data & AI Intern — *Austin, TX*

- Implemented technical MVP for CERTD (employee upskilling seed startup)

Projects

Cavalier Autonomous Racing | *ROS, C++, CMake* — April 2024 – Present

- Refactored state machine to handle emergency racing scenarios using ROS2 and in-house YAML validator
- Migrated GUI to Qt C++, increasing data throughput by 25% enabling asynchronous monitoring of car metrics

theCourseForum | *Django, PostgreSQL, JQuery, AWS* — August 2022 – May 2025

- President of largest university course and grade analytics platform serving 20,000+ students (85% student body)
- Implemented trigram/reverse-indexing search algorithm supplanting ElasticSearch, saving $150/mo

none-ls | *C, Lua, Plenary*

- Core maintainer of NeoVim's largest (2.9k+ stars, 10k users) LSP integration framework

guard | *Lua, libuv, busted*

- Developed first NeoVim asynchronous formatting and linting utility (6k users) with Lua coroutines

Technical Skills

Languages: Python, C, C++, Java, JavaScript, TypeScript, HTML/CSS, SQL, Lua, Shell, Bash
Technologies/Frameworks: React, Node.js, Next.js, Git, Docker, AWS, GCP, Redis, Protobuf, Jenkins