Justin Reed

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Education

University of Pennsylvania, MSE in Computer Science | *GPA: 3.5* Jan 2024 – May 2026

- **Concentration:** Systems
- **Coursework:** Internet/Web Systems, Networked Systems, Operating Systems, Databases, Applied Machine Learning, Algorithms, Probability, Convex Optimization, Computer Graphics, Computer Org/Design

Haverford College, BS in Computer Science | *GPA: 3.7* Sept 2020 – May 2024

- **Minors:** Economics and Chinese
- **Coursework:** Data Structures and Algorithms, Concurrency, Computer Systems, Data Science, Economic Statistics, Intermediate Microeconomics, Intermediate Macroeconomics, Money and Banking, Linear Algebra

Experience

Research Assistant | *Hotspot Stoplight – University of Pennsylvania, Philadelphia, PA* Oct 2025 – Present

- Optimize Python data pipelines sourcing geospatial data from Earth Engine, deploy models to Google Cloud
- Develop Vertex AI machine learning models for assessing ecological risk around developing cities

Statistical Programming Intern | *Corcept Therapeutics – Redwood City, CA* June 2025 – Aug 2025

- Developed software tool in R for filtering and improving readability of Pinnacle 21 validator reports
- Designed dashboard application for visualizing data of ongoing clinical study using R Shiny

Software Developer | *Haverford Innovation Program – Haverford, PA* May 2024 – Aug 2024

- Secured $19.5k seed grant for team of 3 to iteratively develop friend-finder app through Agile sprints
- Built real-time chat and user authentication with React, Node.js, and backend database integration

Teaching Assistant | *Microeconomic Analysis; Theory of Comp. – Haverford, PA* Jan 2023 – May 2024

- Tutored 60 students in writing, debugging, and optimizing Python scripts with NumPy, pandas, matplotlib

Projects

Cloud-Deployed Web Search Engine | *Java, Spark, AWS EC2, Git (12396 Lines)* Aug 2025 - Dec 2025

- Implemented from scratch: HTTPS Web-server, Key-Value Store, and Spark-style distributed analytics framework
- Engineered and optimized web-crawler, indexer, and ranker, deploying to EC2 and processing over 400k pages

UNIX-Like Operating System | *C, Docker, Git (2442 Lines)* Apr 2025 - May 2025

- Designed and implemented a FAT-style file system in C, integrating with team's priority scheduler and shell

Chord Application and LS Routing Protocol | *C++, Docker, Git (4637 Lines)* Feb 2025 - Apr 2025

- Implemented Chord: a distributed hash table with efficient key-based routing and dynamically balanced storage
- Developed LS routing protocol for adaptive shortest-path computation with low-traffic neighbor discovery

Minecraft-Inspired 3D Game Engine | *C++, OpenGL, Git (4621 Lines)* Nov 2024 - Dec 2024

- Created custom 3D game engine system with efficient rendering, dynamic terrain features, interactive GUI

Neural Network for Pinyin Translation | *Python, Pytorch, CUDA, Colab (413 Lines)* Apr 2024 - May 2024

- Designed Seq-to-Seq Neural Network that translates Chinese sentences from 1522 pinyin to >100k characters

Skills

Software Engineering: C++, C, Java, C#, JavaScript, Node.js, OpenGL
Data & ML Systems: Python, SQL, Spark, PyTorch, Vertex AI, Pandas, R, MongoDB, Neo4j
Infrastructure & Tools: AWS, EC2, Google Cloud, Git, Docker, CUDA, Linux, Copilot, Datagrip
Other: Mandarin Chinese (Proficient), Agile Development, Chess (1737 FIDE)