Richard Hu

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Education

University of California, Berkeley — Berkeley, CA
Electrical Engineering and Computer Science B.S. — GPA: 3.92 — *August 2019 – May 2023*

- **Courses**: Algorithms, Operating Systems, Data Structures, Parallel Computing (Graduate), Machine Learning, AI, Computer Architecture, Probability and Stochastic Processes, Time Series, Convex Optimization, Linear Algebra
- **Honors**: Dean's List, Eta Kappa Nu (HKN) Honor Society, EECS Honor Society

Experience

- **The Voleon Group** — Berkeley, CA
  Software Engineer Intern - Infrastructure Engineering Team — *May 2022 – August 2022*
  - Created metrics collection tool and dashboard for flaky test detection, using **Python**, **Docker**, **Groovy**, **Elasticsearch**, and **Kibana**, and proposed specifications to engineers across **2 teams**
  - Enabled consistent enforcement of flaky test guidelines, reducing time to identify severity of flaky tests by over **98%** from over **1 hour** to **1 minute** and saving over **9 person-hours** per week
  - Profiled and analyzed **Airflow** DAGs to identify sources of slowdown within critical production jobs and detected multiple functions causing substantial slowdown in over **80%** of DAGs
- **Amazon** — Bellevue, WA
  Software Development Engineer Intern - On-Road Execution team — *May 2021 – August 2021*
  - Developed internal debugging tool to rapidly store and retrieve transporter itineraries using **Java** and **Typescript**
  - Collaborated with **3 engineers** to set up **AWS S3 buckets**, **AWS Glue Tables**, and **AWS Kinesis Firehose delivery streams** using **AWS CDK**
  - Defined APIs to push itineraries through Firehose delivery stream to S3 buckets and query **AWS Athena** to retrieve itineraries by time range and transporter ID, and modified existing backend to utilize new APIs
  - Reduced all itinerary-related human debugging time by **95%**, from **20 minutes** down to less than **1 minute**
- **University of California, Berkeley** — Berkeley, CA
  Undergraduate Research Assistant - SLICE Lab (advised by Professor James Demmel) — *August 2021 – Present*
  - Lead research group exploring applications of communication-reduction and privacy-preservation via **randomized linear algebra**, and **differential privacy** in **federated learning** settings
  - **RayLEAF**: Design, develop, and optimize **fast and scalable** benchmark with **flexible APIs** using **PyTorch** and **Ray**, achieving over **60x** speedup over existing frameworks

  Head Teaching Assistant (TA) - CS 70 Discrete Mathematics and Probability Theory — *June 2020 – Present*
  - Manage **over 50 members of course staff**, teach discussion sections of **40 students**, and coordinate course logistics with 4 other head TAs and 2 professors for a class of **over 850 students**
  - Rated **4.7 / 5** on average by students and won **Outstanding Graduate Student Instructor Award (2021)**, awarded to **top 10% of TAs university-wide**

Projects

- **Parallel De Novo Genome Assembly** — *March 2022 – April 2022*
  - Partnered with **2 students** to develop parallel algorithm for genome assembly using a **distributed hash table with linear probing** built using **C++**, **shared memory parallelism**, and **distributed memory parallelism**
  - Achieved **4x speedup** over baseline parallel solution and **over 100x speedup** over baseline serial solution, placing in the top **10%** in a course of over 100 graduate students
- **Lines of Action** — *March 2020 – April 2020*
  - Implemented 2-player Lines of Action board game in Java playable via terminal or GUI using AWT and Swing
  - Researched game tree evaluation and engineered an AI based on **Winands et al. 2001**, winning **second place** in a course-wide tournament of over **400 competitors**

Skills

Advanced: Java, Python, C, C++, Git, Machine Learning, Statistics, NumPy, PyTorch, Parallel Computing, OpenMP, Open MPI, CUDA, UPC++, Ray
Familiar: JavaScript, Typescript, SQL, Unix, AWS, TensorFlow, Jax, Elasticsearch, Docker, Kubernetes