

# Daksh Dua

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## EXPERIENCE

### CLOCKWORK SYSTEMS | SOFTWARE ENGINEER

Aug 2022 - Present | Palo Alto, CA

- Head of an 8-person team that developed a platform to monitor network infrastructure for distributed AI/ML workloads supported by NVIDIA Collective Communications Library (NCCL). The platform exposes GPU communication throughputs, latency metrics, and NIC health, allowing users to quickly debug issues with their cluster and workloads.
- Led 4 developers in the redesign and modernization of the product UI, migrating a static HTML dashboard to use Vue.js and D3.js for reactive data visualization; moved from static measurements and offline reports to live-streamed and replayable insights and alerts for customer deployments.
- Co-led a 15-person team to productionize the clock synchronization product, scaling from a centralized architecture capable of managing at most 3k servers to a fault-tolerant distributed architecture managing over 100k VMs.
- Developed an RDMA traceroute utility in C++ for RDMA over Converged Ethernet (RoCE) clusters to determine the path taken by RoCEv2 packets in the network, which is not possible with traditional traceroute utilities. This utility can be used to triangulate issues with distributed ML training to a particular switch or link in a user's network.
- Advocated for and implemented a testing workflow for the product, which has captured hundreds of bugs that would have otherwise have been shipped to customers. Automation of the workflow has achieved 80% code coverage for the core clock synchronization product in 70% of time required for manual testing.
- Built and maintained multiple product demos used for sales and conferences, highlighting the performance of Clockwork's clock synchronization and congestion control products. Exhibited in joint presentation with Oracle and Uber, as well as at CNCF KubeCon editions, Oracle CloudWorld 2023/2024, FinOps X, and The AI Conference 2023.
- One of first 10 engineers hired at startup founded by Stanford professors Balaji Prabhakar and Mendel Rosenblum.

### AMAZON | SOFTWARE DEVELOPMENT ENGINEER INTERN

May 2021 - Aug 2021 | Seattle, WA

- Designed and developed test automation for the Treasure Truck team, using AWS technologies including AWS Lambda, DynamoDB, API Gateway, IAM, CloudFormation, VPC, CloudWatch, and Pipelines.
- Created a Java Coral framework microservice to automate test customer account creation and maintenance, and a Picocli CLI client for its convenient use.

### TEXAS ROBOTICS | STUDENT RESEARCHER

Jan 2020 - June 2022 | Austin, TX

- Worked with Texas Robotics and Good Systems to develop an autonomous fleet of food delivery robots on campus.
- Developed a person-avoidance algorithm using Robot Operating System (ROS) for a human-robot interaction paper.
- Reverse-engineered the Boston Dynamics Spot's gRPC protocol for Gazebo simulation.

### SENATE OF COLLEGE COUNCILS | ADMINISTRATIVE DIRECTOR

Nov 2019 - Mar 2022 | Austin, TX

- Deployed a secure voting platform for remote organization meetings. The project was hosted on Heroku, using client-side JavaScript for the voting administration website. Used Express on the server and PostgreSQL for persistence.
- Built an Initiative Database website to track ongoing and completed student government projects for non-technical users to maintain using Google Sheets as a Content Management System.
- Spearheaded website modernization and ADA compliance initiatives.

## EDUCATION

### UNIVERSITY OF TEXAS AT AUSTIN

Sept 2019 - May 2022 | Austin, TX

- GPA: 4.0/4.0
- Bachelor of Science in Computer Science w/ Core Texts and Ideas Certificate
- Distinctions: National Merit Scholarship; College of Natural Sciences Inventors Fellow; College of Natural Sciences Second Year Excellence Award; Distinguished College Scholar; Phi Beta Kappa Inductee;

## SKILLS

- **Languages:** C++, Go, Typescript, HTML, CSS, JavaScript, Java, C, Python, x86 Assembly, Clojure, MATLAB
- **Cloud Platforms:** Google Cloud, AWS, Oracle Cloud Infrastructure, Heroku, Azure
- **Databases:** InfluxDB, PostgreSQL, MySQL
- **Technologies:** Vue.js, D3.js, Grafana, etcd, Bazel, Kubernetes, Node.js, gRPC, NVIDIA Collective Communications Library (NCCL), Docker, Bootstrap, Robot Operating System (ROS)