Saurabh Totey

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Experience

Amazon Web Services — Amazon Connect July 2023 – Aug. 2025
Software Development Engineer *Seattle, WA*

- Eliminated a 20+ hour monthly manual deployment process by fully automating infrastructure updates: split the pipeline into per-availability-zone stages and added automatic, alarm-gated host replacement (AWS Step Functions, CloudFormation). Also sharply reduced compliance (FedRAMP) findings for outdated machine images.
- Enabled that automation by reallocating subnets in order to expand the service's IP address space so old and new hosts could run side by side (saving $\sim$ 2 hours of on-call time per bad deployment), and helped migrate its infrastructure code from a deprecated internal framework to AWS CDK (TypeScript).
- Made call-recording delivery crash-resilient: recordings from crashed hosts now upload automatically, replacing $\sim$1.5 hour manual on-call recoveries (several per week after bad deployments) that delayed customers' recordings by up to a week and occasionally lost them (Java).
- Enabled supervisor barge-in for government contact centers by enabling feature in AWS GovCloud (US), coordinating across Amazon Connect teams; handled U.S. citizen-only (ITAR) engineering and on-call.
- Was relied on as a code reviewer on the team and shipped many high quality changes: in final year, shipped 105 code reviews, approved 199 code reviews, and took 1.1 revisions on average (team averages were 68 shipped code reviews, 108 approvals, and 1.4 revisions).

Amazon Devices — Alexa May 2022 – Aug. 2022
Software Development Intern *Boston, MA*

- Built LED-based timer progress indication for screenless Alexa devices; owned requirements across several distributed teams and demoed the shipped feature (embedded).

PhET Interactive Simulations, CU Boulder May 2018 – Aug. 2021
Software Developer *Boulder, CO*

- Built large portions of four browser-based science and math simulations in JavaScript, including Blackbody Spectrum, Curve Fitting, and Number Line Distance; refactored shared library code and fixed memory leaks.

Education

Tufts University Sept. 2025 – May 2027 (expected)
M.S., Computer Science *Medford, MA*

- Research: classical algorithms for approximating partition functions of interacting quantum systems (paper in preparation)

University of Colorado Boulder Aug. 2019 – May 2023
B.S., Engineering Physics and Computer Science; Minors in Mathematics, Quantum Engineering, Philosophy *Boulder, CO*

- GPA 3.93/4.0, Summa Cum Laude; undergraduate research on bosonic quantum error correction

Projects

Planetary Conquest | *Rust, wgpu* In progress

- Voxel game engine with greedy chunk meshing, frustum culling, batched terrain generation with dynamic chunk loading and unloading, and build-time shader compilation and texture packing into GPU texture arrays.
- Derived jump physics analytically from gameplay targets (height, distance, variable hold time); built debug tooling including wireframe rendering, flight mode, an FPS counter, and screenshot capture.

Physics Informed Neural Networks for Gravity Modelling | *Python, Tensorflow, Matplotlib*

- Worked with Dr. John Martin in the Autonomous Vehicle Systems lab in reasoning about his Physics Informed Neural Networks (PINNs): played with PINN loss functions, created toy models, and developed visualizations for comparing PINNs against other gravity models.
- Was one of 25 chosen out of over a 100 to present the work in a poster session at the DLA symposium.

Movie Chooser | *TypeScript, React, Next.js, PostgreSQL*

- Full-stack web app that picks a movie for a group, weighting each member's watch-list equally; integrates the TMDB API, stores ratings and statistics in PostgreSQL, and was built mobile-first and accessible.

Publications

- S. Totey, A. Kyle, S. Liu, P. J. Barge, N. Lordi, J. Combes, "The performance of random bosonic rotation codes," arXiv:2311.16089 (2023).
- Classical approximation of partition functions of interacting bosonic Hamiltonians, with S. Mehraban and collaborators (in preparation).

Skills

Languages: Java, TypeScript, Python, Rust, SQL
Cloud & Infrastructure: AWS (CDK, CloudFormation, Lambda, Step Functions, EC2 Auto Scaling, GovCloud), CI/CD, Nix
Spoken: English (native), Spanish (fluent), French (intermediate)