Saurabh Totey Résumé

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Experience

July 2023 - Present

Amazon Web Services (AWS) Connect
Software Development Engineer
- Am improving usability for metrics and alarms in the AWS Connect service to allow for more effective responses to problems that can occur in the service
- Collaborate on code changes and participate in code reviews across multiple teams

May 2022 - Present

Combes Theory Group
Undergraduate Research Assistant
- Am investigating the performance of random quantum codes for quantum error correction in bosonic harmonic oscillator contexts
- Use Python and Julia to run numeric experiments comparing the error-correcting capabilities of random codes to cat, binomial, and hexagonal GKP codes under loss and dephasing noise

January 2023 - May 2023

CU Classical Mechanics I Course (PHYS 2210)
Learning Assistant
- Helped students work through course material at the course's help room
- Attended lectures and guided students through tutorials and clicker questions
- Lectures had around 100 students and help rooms tended to have about 20 students

August 2022 - December 2022

CU Theory of Computation Course (CSCI 3434)
Grader
- Graded more than 40 students' proofs-based weekly assignments with feedback
- Helped manage course infrastructure and support with the instructor, teaching assistant, and course assistant

May 2022 - August 2022

Amazon Devices
Software Development Intern
- Wrote code to give Alexa devices that don't have screens an indication of the remaining duration of their active timers through their LEDs
- Gave a final demonstration and presentation of my working feature
- Owned the feature and managed requirements and documentation between multiple teams with wildly varying locations while working entirely remotely

August 2021 - May 2022

Autonomous Vehicle Systems Lab
Undergraduate Research Assistant
- Wrote toy Physics Informed Neural Networks (PINNs) in Python with Tensorflow for gravity modeling
- Wrote code to perform visualizations and other comparisons of PINNs against traditional Polyhedral models
- Presented a poster of my work as one of 25 students selected to present about their project out of over 100 students

August 2021 - December 2021

CU Data Structures Course (CSCI 2270)
Learning Assistant
- Held office hours and helped students work through the course
- Attended recitations and helped students with the recitation material
- Aided about 30 to 40 students per week on average

May 2018 - August 2021

PhET Simulations
Software Developer
- Wrote JavaScript code for educational scientific simulations for use on web browsers
- Worked on simulation code and made changes to common code like refactors or fixing memory leaks
- Developed large portions of the Blackbody Spectrum, Curve Fitting, Number Line Integers, and Number Line Distance simulations

January 2020 - May 2020

MATH Independent Study
Undergraduate Research Assistant
- Worked with Dr. Tianyuan Xu and other students to write Python code for the SageMath ecosystem that determined whether a given word from a given Coxeter group is fully commutative or not

Personal Projects

Planetary Conquest Game
Rust, Wgpu, WGSL, Threading, Game Development
- An in-progress voxel game that I am developing in my free time
- Build scripts are used to stitch individual textures into a texture atlas
- World generation is dynamic and threaded so player can explore and the world will generate around them on-the-fly
- Frustum culling ensures vertices are not sent to the GPU for processing if they are not contained within the camera's view frustum
- Utilizes mouse and keyboard tracking and game loop management
- World parameters like gravitational acceleration are parameterized from other factors like desired jump height and jump distance

Movie Chooser Website
TypeScript, React, PostgreSQL, Next.js, Accessibility, CSS3
- A website that chooses movies when many people are watching movies together but have different movie preferences
- Website allows users to create a watch-list with movies; then, when choosing a movie, each user has an equal probability of their watch-list being chosen, and then a random movie from the watch-list is selected
- Users control the probabilities for movies getting chosen from within their watch-list
- Users can rate watched movies and the website calculates fun statistics
- Website consumes the TMDB API for movie information and stores its own information in a local PostgreSQL database
- Website is mobile-first with reactivity to screen size
- Accessibility tags are used wherever possible and accessible design was a large part of the design philosophy for the website

Leadership

May 2020 - May 2023

HackCU Organizer
- Worked in a small team to plan and run the annual HackCU hackathon
- Created significant parts of the website and ensured that the website is accessible
- Planned and hosted workshops at events
- Conducted interviews for potential new HackCU organizers

Languages
- English - native speaker
- Spanish - proficient as a second language
- French - intermediate

Education

August 2019 - May 2023

University of Colorado, Boulder
Bachelors of Science in Engineering Physics and Computer Science

Minors in Math, Quantum Engineering, and Philosophy

Grade Point Average: 3.931 out of 4
- President Joseph A. Sewall Esteemed Scholar Award
- Engineering Merit Scholarship
- Quantum Scholars Fellow with Scholarship
- Dean's List 8-time recipient
- Summa Cum Laude in the College of Engineering and Applied Science
- Sigma Pi Sigma Member