

Vishva Arasan

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EDUCATION

University of California Santa Barbara

Bachelor of Science in Computer Science

Santa Barbara, CA

Sep 2024 – June 2028

TECHNICAL SKILLS

Languages: Python, Java, C/C++, SQL, HTML/CSS, JavaScript

Frameworks: Django, Django REST Framework, Flask, Node.js

Tools & Testing: KLEE, DeepSeek V3.2, Git, Postman, PostgreSQL, SQLite, Vim, VS Code

Core Concepts: Symbolic Execution, Fuzzing, Static Analysis, REST APIs, ORM

RESEARCH EXPERIENCE

Undergraduate Research Assistant

UCSB Verification Lab (Advisor: Prof. Bultan)

Jan 2026 – Present

Santa Barbara, CA

- Developing an automated pipeline using DeepSeek V3.2 to generate C drivers and harnesses for KLEE, automating symbolic execution for vulnerability detection.
- Implementing guided reasoning agents to detect "error hotspots" via static analysis and generate instrumented files with automated assert statements.
- Engineered a data abstraction layer converting C structures (Linked Lists, Arrays) into JSON representations to facilitate LLM reasoning over program state.
- Evaluating detection precision and recall against the Juliet test suite and published parser libraries to benchmark against the STASE tool.

PROJECTS

Bloom Filter Performance Analysis | *Python, Matplotlib, Data Structures*

Nov 2025

- Developed a Bloom Filter from scratch to analyze the trade-off between memory footprint and False Positive Rates (FPR) using NumPy.
- Engineered two hashing strategies: a polynomial rolling hash and a seeded random generator, identifying uniformity failures in polynomial hashing for correlated inputs.
- Validated experimental results against theoretical models across 10 trials per parameter, confirming optimal hash count (k) for varying capacity factors (c).

Global Countries Management API | *Python, Django, REST Framework*

Dec 2025

- Developed a RESTful API for managing international data, implementing full CRUD operations and custom search logic via Django QuerySets.
- Standardized JSON error handling and data integrity through ModelSerializers and input validation logic.

Task Management API | *Python, Flask, SQLAlchemy*

Jan 2026

- Built a backend service using Flask and SQLite, utilizing SQLAlchemy ORM for normalized database schema management.
- Performed comprehensive endpoint testing via Postman to ensure compliance with stateless REST architectural standards.

PROFESSIONAL EXPERIENCE

Computer Science Intern

CUBUS Solutions Inc. (Merged with Tyfone)

April 2023 – July 2023

Livermore, CA

- Supported the development of digital banking e-Statement services using SQL databases and JavaScript APIs.

High School Coding Tutor

Granada High School

Aug 2023 – June 2024

Livermore, CA

- Mentored students in Python and Java, debugging algorithmic issues and explaining AP Computer Science concepts.