

# Pranav Dani

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## EDUCATION

### SUNY – Stony Brook University

Master of Science, Computer Science

Aug 2023 - May 2025

New York, USA

- Courses: Distributed Systems, Operating Systems, Computer Architecture, Theory of Databases, System Security
- Teaching Assistant: (CSE - 316) Fundamentals of Software Development

### University of Mumbai – Thadomal Shahani Engineering College

Bachelor of Engineering, Information Technology

Aug 2019 - May 2023

Mumbai, India

- Courses: OS, DBMS, DSA, Computer Networks, Network Security, Computer Architecture, Data Mining

## EXPERIENCE

### GPU Profiling

Graduate Research Assistant

May 2024 – Present

New York, US

- Developing a software solution to capture CPU and GPU execution contexts, enabling the generation of flamegraphs and providing programming assistance for energy-efficient data centers.

### Suven Consultants

Software Intern

Jun 2021 – Aug 2021

Mumbai, India

- Collaborated on two Open Source Java projects: Home Inventory and Loan Management tool.
- Used **Printable interface** to generate printable reports in PDF format using **Java AWT and Graphics Library**.
- Used SQLite3, JavaFX, and Java Swing components.

## SKILLS

**Languages:** C, C++, Java, Python, JavaScript

**Databases:** PostgreSQL, MySQL, MongoDB

**Tools:** Git, qemu

**Web:** React.js, Node.js, Flask, HTML, CSS, JS

**Platforms:** GitHub, Firebase, Heroku

**CI/CD:** GitHub Actions

## PROJECTS AND RESEARCH

### Improving File System syscall performance on Xv6 | C, qemu

Mar 2024 – May 2024

- Engineered **asynchronous disk logging protocol**, enhancing the write efficiency, resulting in a **94% latency reduction**.
- Introduced small file support with file type conversion handling. Resulted in a **reduction of 29% and 91% disk IO** requests with unchanged logging and new logging protocol respectively.
- Implemented **ftruncate() syscall** for file truncation and seamless transition between "small" and regular files.

### Fault Tolerant Sharded Key-Value Store With Transactions using Raft | C++

Aug 2023 – Dec 2023

- Created a **persistent linearizable key-value store** utilizing the **Raft consensus algorithm** for leader election and data replication in an **asynchronous environment**. Implemented **log compaction** with **Snapshots**.
- Engineered **sharding** using **consistent hashing**, ensuring efficient data distribution across nodes. Automated **partition rebalancing** during node joins and departures.
- Implemented a **versioned key-value store** that supports **cross-shard Transactions** using **2-Phase Locking** and **2-Phase Commit** with **Optimistic Concurrency Control**.

### BackGen - Backend Generator | ICT4SD | Springer

Aug 2023

- Developed a software tool that **automates** the process of writing **backend code** for web applications.
- Creates a structure for data models and **RESTful API endpoints**, and generates executable code for the same in Golang.
- Generates approximately 48% of the code. (Result evaluated for creating a backend for a simple Todo application.)

### Maa-Sampati Marble and Granites | React.js, CSS, TypeScript, Firebase, Flutter | GitHub

Jul 2021 – Oct 2021

- Architected an easy-to-use **E-commerce platform** for creating Granites and Marble quotations using React.js.
- Utilized REST APIs in the web app to interact with Firebase for storing orders.

### Expense Tracker | Flask, PostgreSQL, Heroku, HTML, CSS, JS | GitHub

Apr 2021 – Jun 2021

- Designed and built a web app for recording and **managing personal expenses** with support for creating bulk expenses and **exporting user data in CSV and Excel formats** using Flask and PostgreSQL and hosted on Heroku.
- Provides the functionality to create **personalized budgets** based on multiple categories.

## EXTRACURRICULAR ACTIVITY

### Our Tech Community (OTC) | ourtech.community | Admin

May 2022 - present

- Hosted 200+ hours of weekly **OTC CatchUp** sessions, organized two in-person **OTC MeetUp** event with 60+ attendees.