

Pranav Dani

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EDUCATION

SUNY – Stony Brook University

Master of Science, Computer Science

Aug 2023 - May 2025

New York, USA

- Courses: Computer Architecture, OS, Distributed Systems, System Security, Theory of Databases, Analysis of Algorithms
- Teaching Assistant: Fundamentals of Software Development

University of Mumbai – Thadomal Shahani Engineering College

Bachelor of Engineering, Information Technology

Aug 2019 - May 2023

Mumbai, India

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

EXPERIENCE

GRA: GPU and CPU Profiling - Advisor: Prof. Dongyoon Lee

Energy Flamegraphs

May 2024 – Present

New York, US

- Built a CPU Energy Flamegraph tool using Linux perf_events and [PowerAPI](#) to monitor power consumption per function call, enhancing energy efficiency analysis. for developers.
- Developed a GPU Energy Flamegraph tool using CUPTI and NVML to monitor GPU power consumption per kernel, enhancing GPU power usage insights for optimization.

Software Intern

Suven Consultants

Jun 2021 – Aug 2021

Mumbai, India

- Developed a Home Inventory and Loan Management tool using Java and SQLite3; gained 150+ active users in the first month.
- Integrated Printable interface to generate PDF reports using Java AWT and Graphics Library, enhancing document accessibility.

SKILLS

Languages: C, C++, Verilog, Java, Python

Databases: PostgreSQL, MySQL, MongoDB

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

Tools: QEMU, Perl, Bash, GTKWave, Git

Platforms: GitHub, Firebase, Heroku, Unix, Linux

CI/CD: GitHub Actions, Docker

PROJECTS AND RESEARCH

RISC-V CPU - RV64IM | Verilog, GTKWave, C

Jun 2024 – Nov 2024

- Designed a five + stage in-order pipeline for RV64IM spec extension which talks to the physical memory over [AXI4 protocol](#).
- Implemented an ALU to execute instructions, and interact with reg file, supporting pipeline stalls on RAW data hazards.
- Added branch prediction, Set-Associative cache, and support for load/stores and ECALL instructions with pipeline flush.

Improved xv6 File System | C, QEMU

Mar 2024 – May 2024

- Built a disk logging protocol targetting in-memory buffers and disk writes, reducing disk write latency by 94%.
- Added small file support with file type conversion, optimizing disk space utilization and reducing disk I/O by 95% for files < 52B.
- Implemented `ftruncate()` syscall for file truncation and automatic transition between "small" and regular files.

Raft Implementation - Consensus Algorithm | C++

Aug 2023 – Dec 2023

- Built a persistent key-value store using Raft for leader election and data replication. Added snapshotting for quick recovery.
- Implemented sharding with consistent hashing for efficient data distribution and automated partition rebalancing.
- Developed a versioned key-value store that supports cross-shard transactions using 2-Phase Locking and 2-Phase Commit with Optimistic Concurrency Control.

BackGen - GoLang Backend Generator | ICT4SD | [Springer](#)

Jan 2023 - Aug 2023

- Developed a software tool that helps with the process of writing repetitive backend code for web applications.
- Creates data models and RESTful APIs in GoLang, reducing development time by 50%.
- Generates approximately 48% of the code. (Result evaluated for creating a backend for a simple Todo application.)

Expense Tracker | Flask, PostgreSQL, Heroku, HTML, CSS, JS | [GitHub](#)

Apr 2021 – Jun 2021

- Developed a personal expense management web app with bulk expense creation and CSV/Excel export, attracting 100+ users in the first month.
- Enabled personalized budget creation across multiple categories, enhancing flexibility in expense tracking.

EXTRACURRICULAR ACTIVITY

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

May 2022 - Present

- Hosted 300+ hours of weekly [OTC CatchUp](#) technical discussions, organized two in-person [MeetUp](#) events with 60+ attendees.