Aronya Baksy

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Education

University of California – San Diego — La Jolla, California, USA
Master of Science in Computer Science (GPA: 4.0) — *Sept 2024 – Present*

Coursework: Parallel Computation, Graduate Operating Systems, Search and Optimization, Principles of Programming Languages

PES University — Bengaluru, India
Bachelor of Technology in Computer Science (GPA: 3.89) — *Jul 2018 – May 2022*

Coursework: Distributed Systems, Heterogeneous Parallelism, Computer Architecture and Organization

Skills

Languages	:	Python, C/C++, GoLang, Rust, Bash
HPC Tools	:	CUDA C++, MPI, OpenMP
Infrastructure	:	Linux (SLES/RHEL/Ubuntu/Debian), AWS (EC2, SQS, DynamoDB, RBAC tools, RDS, EKS), Docker, Kubernetes, Helm, ArgoCD, GitHub Actions, CircleCI, GNU Make, Jenkins
Database Tools	:	MongoDB, PostgreSQL, SQLite
Dev Tools	:	Visual Studio Code, Jupyter, Git, GitHub, PyCharm, GoLand
Office Tools	:	MS Outlook, MS Excel, MS Word, LaTeX
Soft Skills	:	Collaboration, verbal communication, technical writing, time management

Work Experience

Cloud Developer (I) — Aug 2022 – Aug 2024
Hewlett Packard Enterprise — *Bengaluru, India*

- Designed and developed **microservices** and **CI/CD pipelines** using GitHub Actions and Bash scripting for deployment to HPE GreenLake Private Cloud
- Deployed **REST APIs** as microservices to **AWS EKS** and used **AWS services** like RDS, SQS and DynamoDB to solve business use cases leading to almost **$ 1bn in revenue in FY23**
- Deployed and architected a **custom distributed cloud solution** deployed at The Home Depot's **2300+ stores** in the US
- Led initiatives to **harden** microservices to **DISA IL4 standards** for the **fully disconnected Private Cloud** product deployed at the US DoD's DISA
- Offered **real-time monitoring**,support and triaging for **50+ production tenants**

Research and Development Intern — Jan 2022 – Jul 2022
Hewlett Packard Enterprise — *Bengaluru, India*

- Developed a module to implement **Multi-Factor Authentication** for the Apache-based **NSHTTP web-server** released in HPE NonStop HTTP Server v2.4 Update 3
- Integrate the multi-factor authentication module with third party auth providers from XYPro
- Performed end-to-end testing of the same before release to production on **HPE's NonStop** line of **mission-critical servers**

Publications

CalBERT: Code-mixed Adaptive Language representations using BERT — *AAAI-MAKE 2022*
March 2022 — *Stanford University, Palo Alto, CA*

Analysis of Zomato Services using Recommender System Models — *IEEE CONIT 2021*
August 2021 — *KLE Institute of Technology, India*

Projects

2D Wave Equation Modelling C++, MPI, x86 SSE2

November-December 2024

- Modelled a 2D Wave equation with absorbing boundary conditions using a 5-point stencil method to approximate using the method of finite differences
- Implemented Ghost cell exchanges using asynchronous communication in MPI
- Tested implementation on SDSC's Expanse supercomputing cluster for various processor geometries and input problem sizes
- Generated the results as a NetCDF file and view the simulation using a GUI

pycask - A key-value in-memory database in pure Python Python, Docker

December 2024

- Implemented the BitCask key-value database architecture in pure Python with minimal dependencies on third-party modules
- Implement add, get, delete and merge operations on the database
- Benchmarked performance measurements for insertion and deletion operations on different database sizes

linux-pulse: Operating System Measurements for Linux C++, x64 ASM, Linux API, GNU Make

October - November 2024

- Made performance measurements for various basic user operations on Linux, ranging from CPU operations like system calls and context switches, to file system, network and memory access operations
- Used high-resolution CPU Timers in x64 assembly to make granular performance measurements

gocpparallel - A user-space M:N threading model for C++ C++, pthreads

October - December 2021

- Implemented a M:N threading model that allows user-level threads to be mapped to kernel-level pthreads, replicating the functionality of Go's goroutines
- Implemented a round-robin scheduling for user threads onto waiting kernel threads using a queue
- Demonstrated that the threading model implemented shows progress and does not deadlock using a simple producer-consumer setup with upto 1 million concurrent threads

Togepi - a distributed version control system Python, PyQT, Dropbox

October - November 2021

- Built a centralized version control system loosely based on Git that tracks file history between multiple collaborators
- Used DropBox for file storage and track revision history, enable password-based user login, commit and pulling changes, viewing revision history for files and directories
- Usable as a simple CLI built in Python, or as a GUI application