Abhijeet Singh Mandloi

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Education

Indian Institute of Technology Bombay (IITB), Mumbai — Jul 2022 – Jul 2024
M. Tech., Computer Science and Engineering — *CPI: 8.33/10.0*

Madhav Institute of Technology Gwalior — Aug 2017 – Jul 2021
B. Tech., Computer Science and Engineering

Experience

Assistant System Engineer | *Tata Consultancy Service* — Aug 2021 – March 2022

- Worked in the Quality Assurance team, performing manual and regression testing to ensure software functionality and reliability.

Projects

KernelPeek | *C,C++, valgrind* |

- Built multiple **Linux kernel modules** to provide detailed insights into **process states**, **child process management**, and **memory allocation statistics**.
- **Implemented an ioctl-based driver** for **virtual-to-physical memory translation** and **direct memory manipulation** .
- **Built a procfs module** to expose **live kernel metrics**, enhancing system **observability** and supporting real-time **performance monitoring** for critical system statistics like **page faults**.

Multi-threaded Web Server | *C,C++, valgrind* |

- Built a multi-threaded web server using thread pooling to handle concurrent clients, ensuring no memory leaks
- Implemented a closed-loop load generator to analyze various performance metrics and capacity of the web server

Container Management System | *C, C++,Docker,bash* |

- **Developed** a **container management tool** similar to **Docker**, enabling the **creation** of fully-fledged **Debian container images** and instantiation of new containers.
- **Implemented network capabilities** including **paths between containers** and hosts, containers and the public, and between different containers on the same host..

Enter the VM | *C,C++, valgrind* |

- Designed a **high-performance hypervisor** using **KVM APIs** to efficiently manage **guest VMs**, **virtual CPUs**, and **memory resources**.
- Built a **custom resource allocation mechanism** to dynamically allocate **CPU resources** between multiple **guest VMs**

Predicting Song Release Year Using Timber based Audio Features | *Python, pandas*

- **Developed** a **Feedforward Neural Network model** from scratch using **Backpropagation** to accurately predict the release year based on the timber-based audio features
- Applied a suite of advanced techniques, including Feature Scaling, Feature Selection, Dropout, and Batch Normalization, to achieve greater performance.

BlinkEye: A system to monitor student activity from eye behavior | *Python, Flask, HTML, CSS* |

- Developed a system that **monitors** blink rate, screen time percentage, and key eye health indicators.
- **Created interactive dashboard** using Flask backend
- **Implemented automated data collection and storage**

Simulation of a P2P Cryptocurrency Network | *Python,Blockchain* |

- **Built** a **discrete-event simulator** to model a **P2P cryptocurrency network**
- Implemented transaction generation, network topology, latency simulation, transaction forwarding, PoW mining, and blockchain maintenance

Skills

Programming : Python, SQL, C/C++, Shell scripting
Tools & Libraries : Git, docker, valgrind
Databases : PostgreSQL, MongoDB

Honors & Awards

GATE CS - AIR 128 — 2022
Secured it amongst 77257 candidates with a GATE score of 820 out of 1000 in GATE CS Paper.