Shamil K Muhammed

Undergraduate Student

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Experience

IIIT Hyderabad
Hyderabad, India

Student Sysadmin
2022 - Present

- Moved the outdated Virtuozzo based containers and virt-manager based VMs to Proxmox VE, enabling easy management of the entire infrastructure
- Moved old Squid + Iptables based Firewall to PfSense
- Implemented a complete logging + IDS solution for Campus wide network using PfSense + Elasticsearch
- Implemented a modern backup solution using BorgBackup and Borgmatic
- Designed and deployed a new framework for lab exams with high security features like restricted inter device communication, restricted LAN access, disabled USB devices, kernel based auditing, etc. which was used for DSA and CSO courses
- Designed and deployed highly available multimaster LDAP replication with load balancing instead of the outdated single master setup

Scalable Compilers for Heterogeneous Architectures Group, IIT Hyderabad
Hyderabad, India

Research Intern on IR2Vec
2023 - 2023

- Made an automated python packaging workflow for the IR2Vec library
- Reduced the python wheel size from 60MB to 5MB while increasing the compatibility of the wheels to musl based OSes and older linux distros
- Created a fully dockerized dev/building environment with latest LLVM but older glibc to facilitate compatibility

BlendEd Edtech
Kozhikode, India

Devops Intern
2021

- Moved traditional Docker compose based deployment to Kubernetes, enabling easy scaling and monitoring of applications

Free Software Community of India (FSCI)

Volunteer Sysadmin
2018 - 2020

- Maintained Poddery.com, A federated facebook alternative used by 500 monthly active users
- Setup and maintained a Matrix.org homeserver for FSCI, writing a custom authenticator plugin to let users authenticate against Poddery
- Setup monitoring and alerting for the various FSCI services using Prometheus and Grafana
- Setup a VPN solution for secure cross-service communication using Tinc

Projects

Racket Compiler

A compiler for a subset of Typed Racket

- Built as part of the Compilers course
- Supports functions, conditionals, loops, tuples, garbage collection, etc.
- Has optimizations like constant folding, partial evaluation, dead code elimination, etc.
- Wrote a multiprocess fuzzer which found errors in the book and the reference implementation

Medical Chat Bot

A RAG based Chat bot for answering medical questions

- Built as part of a hackathon hosted by ECell Hyderabad
- Did RAG on the given gataset to answer source supported medical questions
- Used llama.cpp, llm multitool etc to run the model locally, ensuring privacy
- Demonstrated the model even on the edge, using a Google Pixel 7

Universal Backup

A borg + borgmatic binary that works on any Linux distribution without any dependencies.

- Runs on any linux distribution that has GNU libc 2.12 or later, ie any distribution released after 2011

AutoTorch: Minecraft Mod

A quality of life Minecraft Mod

- Automatically places torches in the player's hand when the player is in a dark area
- Has over 12000 downloads on CurseForge

Synapse Diaspora Authenticator

ALLOWS MATRIX.ORG HOMESERVERS TO AUTHENTICATE USERS USING THEIR DIASPORA CREDENTIALS

- Used by Poddery.com to centralize authentication
- Also made numerous contributions to Matrix.org including developing and deploying a critical security fix on the live network. Credited here as Po Shamil

Discord-CAS

CAS BASED USER VERIFICATION BOT FOR DISCORD

- Current maintainer of the Discord-CAS project, used by IIIT Clubs and courses with over 1000 registered users.
- Implemented auto updation of the bot using Github webhooks
- Implemented user query for academic servers

NSH: A posix-like shell

A PSEUDO SHELL WRITTEN IN C

- A minimal POSIX shell with full process management, piping, job control and signalling support
- Used valgrind to ensure memory safety

Achievements ───────────────────────────

Megathon

WINNER   *2022*

- Won first in all rounds of Megathon 2022, a hackathon hosted by E-Cell, IIIT Hyderabad in collaboration with Stellantis and Qualcomm

Google Code In

FINALIST   *2016*

- Finalist out of 1000 students in Google's international pre university programming contest

Education ───────────────────────────

International Institute of Information Technology   *Hyderabad, India*

BTECH + MS IN COMPUTER SCIENCE   *May 2021 - July 2026s*