Abhilash Venkatesh

(Alias Name: Abhilash V)

Bengaluru, Karnataka, India   Github | Linkedin | Google Scholar | Website

Education

Georgia Institute of Technology
Online / Jan 2025 - Present
Masters in Computer Science

National Institute of Technology Karnataka, Surathkal
Mangalore, Karnataka, India / July 2016 - June 2020
Bachelor of Technology in Information Technology
CGPA 9.08/10.0

Technical Leadership Work Experience

Lead Engineer, Foundation for Science, Innovation, and Development (FSID),Centre of Data for Public Good (CDPG) (Formerly IUDX Programme Unit)
Indian Institute of Science (IISc) campus, Bengaluru, Karnataka / April 2023 - January 2025

- Led Data Privacy research systems team in integrating SMPC-based framework Carbyne Stack offline phase into SGX-based TEE to accelerate offline phase

- Trained, delegated and guided the DevOps team of five members on end-to-end Docker and Kubernetes (K8s) based Data Exchange deployment.

- Supervised the team of 3-5 members to the execution of two significant platform deployment migrations - updating the K8s platform and dataset ID migration with careful planning and testing resulting in at most half-day downtime.

- Co-developed screening tests, and assignments, and hired three candidates out of more than twenty candidates for DevOps role,

Technical Work Experience

Senior Software Engineer, SID, India Urban Data Exchange (IUDX) Programme Unit
IISc campus, Bengaluru, Karnataka / April 2022- March 2023

- Designed and implemented cloud cost optimization in AWS cloud, reducing the cost by 40%.

- Proactively secured the platform during CVEs, especially Log4j2-shell attack, introduced secure coding practices through OpenSSF badge and operational security through strong passwords, two-factor & hardened K8s clusters.

Software Engineer, SID, IUDX Programme Unit
IISc campus, Bengaluru, Karnataka / July 2020- March 2022

- Orchestrated Docker Swarm deployment of IUDX platform and infrastructure automation using Ansible.Code

- Researched and implemented clustering of databases and backend API servers using Kubernetes(K8s) in AWS and scaled to handle 1000 concurrent users.Code

- Led a team of two members to deploy and support the end-to-end platform for external partners in the partner's own Azure K8s as a Service (AKS) environment.

Research Experience

Part-Time Systems Engineer, SID, R&D IUDX Programme Unit & FSID, CDPG
Under Dr. Anshoo Tandon, IISc campus, Bengaluru, Karnataka / March 2022 - March 2024

- Integration of YoLov5 Object Detection, farmer's credit, and de-identification pipeline applications into SGX and AMD-based Trusted Execution environments (TEEs) with remote attestation flow and the Data Exchange system. Code

- Designed, implemented, and supported Secure Multi-Party Computing (SMPC) to run each party on different cloud providers, AWS and Azure, using docker containers. The experimental setup enabled memory optimization and scalability of neural network inference. Code

Summer Research Internship and Major Project
Under Prof. Florent Gluck, HEPIA, Geneva; Associate Prof. Jaidhar C.D, NITK / May 2019 - June 2020

- Worked on project titled Remote Operating System Image Clone Management (ROSIM). We used PXE technology, bash scripting, GRUB, and a tiny Linux kernel built using Buildroot to remotely install/image OS to desktop computers over LAN.

- Designed and implemented optimized OS imaging through caching, multicasting, and existing OS imaging.

- Developed Web-based management interface using Python-based Django framework for ease of OS image management.

Publications

Building a Privacy Web with SPIDEr - Secure Pipeline for Information De-Identification with End-To-End Encryption
CDPG, IISc campus, Bengaluru, Karnataka / March 2024 - Dec 2024

- Helped in porting De-Identification Pipeline to SGX and AMD-based TEE

Enhancing MOTION2NX for Efficient, Scalable and Secure Image Inference using Convolutional Neural Networks
CDPG, IISc campus, Bengaluru, Karnataka / March 2024 - Nov 2024

- Designed, implemented, and supported Secure Multi-Party Computing (SMPC) to run each party on different cloud providers, AWS and Azure, using docker containers.
- Paper Accepted at Proceedings of International Conference on Network Security and Blockchain Technology ICNSBT 2025, yet to be published.

Projects

Protein Sequence Analyzer - Web Application
Under Associate Prof. Nagamma Patil, NITK, Mangalore, Karnataka / Sept 2019 - March 2020

- Designed and implemented the protein tool hosting using NGINX, Gunicorn, Postgres, and systemd services on the Ubuntu server.
- Security against DoS/DDoS attacks achieved through NGINX rate limiting and Google CAPTCHA.

Skills

- **Language & Frameworks:** Bash (5 years), Python (3 years) - Django, Java (2 years) - Vert.x, C (2 years).

- **Technologies:** Git, Linux, Ansible, Cloud (AWS, Azure), Containers, Docker Swarm, K8s, NGINX.

- **Databases:** Elasticsearch, Postgres, Redis, immudb.

- **Security and Privacy:** API, Software and Operational Security, PETs - TEEs, SMPC

- **Project management:** Github projects, Mattermost Open Source Software Development

- **Certifications:** The Kubernetes Crusade: Workshop on Defending and Attacking Kubernetes, Demystifying JWT, OAuth & OIDC, NPTEL Workshop, Google IT Support Professional Certificate, LFD103: A Beginner's Guide to Linux Kernel Development, Linux Foundation, Open Source Software Development Methods

- **Workshop and Presentations:** Smart City Stack and DevOps - at ICDDS, NITK, Dec 2023, and CHRIST University, Jan 2024