# 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

- Droved the open source licensing strategy along with my manager and open source licensing consultant to open source the core Data-Exchange components under Apache 2.0 License. Explored SBOMs and SPDX.

- 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