

# VARAD BELWALKAR

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## Education

**D Y Patil college of engineering and technology, Kolhapur**

**2020-ongoing**

*Bachelor of Technology - Computer Science and Engineering*

*CGPA: 8.46*

**S.M. Lohiya Highschool | New College, Kolhapur**

**2018 | 2020**

*10th | Grade: 96.2% | HSC, 12th Grade: 83.3%*

## Experience

- Deployed and maintaining the college server to ensure seamless access and availability of resources for students and faculties.
- Published PaaS Framework as Docker image which has over **2.8K+** pulls on Docker Hub.

## Projects

**Compute Services | Distributed Systems**

- Engineered backend in **Go** to provide storage and container services by utilizing docker-SDK for Go.
- Used **MongoDB** for storage, **Redis** for faster workflow, Computing platform, and Cookie-based sessions.
- Implemented Client in Go with conventional security practices and hybrid encryption.
- Implemented CI/CD pipeline using **Jenkins** to automate the build, test, and deployment process .

**Load Balancing standalone docker engines | Hobby Research Project**

**2023-ongoing**

- Developing a custom **load-balancer** in **Go** to facilitate the load balancing on multiple nodes.
- Service is in development and implementation following the Raft consensus algorithm.

**Decentralized Document Verification | Blockchain Technology**

- Developed a blockchain-based certificate verification system to enhance the security and authenticity of academic credentials issued by educational institutions.
- Implemented a Merkle tree based for enhanced security and efficiency in verifying academic credentials

**Ethereum-Facilitated Secure Tunnelling | Blockchain Technology**

- Leveraging Smart Contracts on the PoA test network sepolia for End-to-End highly concurrent Webhook interface between client and server behind NAT, with RESTful client implemented in Django.
- Only Contract owners will be able to communicate through the tunnel.

**Docker-DHCP on host bridge | Networking**

- Built a network driver for networking on a host bridge with DHCP-allocated IP addresses in Go.

**Scalable Platform as a Service | System Design**

- Built an **auto-scaling** container-based PaaS framework by implementing NGINX reverse-proxy to load-balance services controlled by replicated **Django-server** through Docker-Swarm.
- Provided a deployment platform, auto-configuring clients for Linux and Windows systems and TLS verification and encryption from the client side.

**Web-based Labs | Web application**

- Developed a User-friendly Web app with **ReactJS** providing services offered by the Compute service framework .
- Implemented a built-in terminal and various conventional practices and security features.

**D-RAM Addressing Attack | Computer architecture**

- Performed a timing attack on intel core i5 to reverse engineer the confidential address mappings .
- Established a **Covert-Channel** to perform illicit inter-process communication between the host and isolated VM.

## Technical Skills

**Languages:** C/C++, Go, Python, JavaScript, PHP, Bash, Powershell, SQL,  $\text{\LaTeX}$   
**Software Tools:** Git, GitHub, Docker, LXD, Podman, Jenkins, Wireshark, Kubernetes, Ansible, Localstack, Terraform(Localstack), EVE-NG  
**Databases:** MySQL, MongoDB, SQLite, Redis  
**Web Dev:** HTML5, CSS3, JavaScript, Node.js, ReactJS, ExpressJS, Django  
**Platforms:** Linux, MacOS, and Windows  
**Cloud Platforms:** AWS  
**Firewalls:** Palo-Alto, Fortigate

## Position and Responsibility

- Carried out Linux-Wargames and took Linux-related sessions.
- Written in-depth tutorials & How-Tos on various topics in various domains available on Github.