

## Academics

<b>2021-present</b> CGPA	B.Tech. in <i>Industrial &amp; Systems Engineering</i> - <b>Indian Institute of Technology, Kharagpur</b> <b>8.89</b>
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## Awards

### • InterIIT Tech Meet 12.0 | Contingent Gold

- Secured overall **first place consecutively for the third time** in the InterIIT Tech Meet 12.0 as a team held by IIT Madras
- Participated in **3 events** as a developer in the team, working on **backend, cloud systems architecture** and **blockchain**
- Developed novel applications using **Metamask Snaps**; **patched bugs** in **aptos library** to send requests from browser
- Implemented **CI/CD** automation for custom-built backends supporting two major events, enabling continuous delivery

## Projects

### • ApnaInsti | Golang, AWS, Docker, Nginx

- Developed **official mobile app for IIT Kharagpur** centralizing academic data, events & integrating exclusive features
- Managed deployment on **AWS EC2** with **RDS & Docker**, utilizing **CodeDeploy & CodePipeline**, scaling for **2000+** users
- Built features: **travel share & buy/sell portal**; led a team developing **Django REST backend & React Native frontend**
- Constructed the **feature roadmap** and oversaw the **system design** and **UI design**, driving the overall technical process
- Implemented **real-time ScoreBoard** feature for GC using **Go** and **WebSockets**, deployed as microservices in **Docker**

### • On-Premise Server Setup & Management | Proxmox, Nginx, Docker

- Configured Proxmox as a **Type-1 Hypervisor**, optimizing resources, and enhancing security, ensuring high availability
- Implemented a fault-tolerant **3-layer architecture**, efficiently handling DNS requests, microservices, & outgoing traffic
- Deployed **Nginx** as the single entry point, accepting & forwarding DNS requests to the appropriate dockerized service
- Efficiently orchestrated and managed multiple VMs running isolated **dockerized microservices**, ensuring **scalability**
- Implemented a dedicated gateway machine performing **SNAT** for routing and forwarding outbound requests securely
- Implemented a robust **custom CI/CD pipeline**, managing authentication of requests through **encrypted auth tokens**

### • Metahub | C, Networking, Bash, systemd

- Revamped a **PtokaX** based **Direct Connect** (DC) Hub exclusive to IIT Kharagpur, simplifying the configuration process
- Meticulously identified and **resolved compilation errors**, ensuring a successful build and seamless installation process
- **Rectified a bug** affecting the ban functionality, resulting into incorrect redirection which improved the server stability
- Developed a script to **automate the setup, start, and stop processes** of the server, enhancing ease of management
- Implemented a script to **monitor the status of the server**, ensuring continuous operation and proactive monitoring
- Successfully established a reliable system startup service using **systemd**, guaranteeing uninterrupted server availability
- **Handled static IP configuration** when the host device changes locations, improving network stability & accessibility

### • MFTP | Python, Docker, Gmail API, ERP Login Module, Systemd, Cronjob

- Developed a service emailing students in **real-time placement portal notices**, ensuring no missed critical deadlines
- Designed to run as a robust **systemd service** or **scheduled cronjob**, monitoring placement portal every **2 minutes**
- Integrated with **SMTP servers & Gmail API** for timely delivery of notification emails **within 1 minute** of post to students
- Utilised **ERP Login Python Package** to implement login functionality for ERP - where the placement portal resides
- Implemented a **health-check** utility to periodically check the logs & notify in case of errors, both deployed via **Docker**

### • ERP Login Module | Python, Gmail API

- Developed and published the iitkgp-erp-login, **Python package on PyPi**, catalyzing a remarkable surge in user adoption
- Successfully achieved an outstanding **90%** reduction in login workflow lines, significantly enhancing code conciseness
- Implemented **OTP support**, using the Gmail-enabled Google API to fetch the latest OTP mail, ensuring seamless login

### • FERP | HTML, CSS, JavaScript, Web Browser Extension

- Published a browser extension **automating feedback form filling** for IIT Kharagpur students, used by **500+** students
- Ensured seamless compatibility with **Chromium and Firefox based browsers**, expanding reach to a bigger user base
- Implemented total **3 feedback modes** - positive, negative and neutral - which ensured diverse feedback representation
- Enhanced efficiency by **automating the transition** to the next course/professor upon form submission, saving time

### • GSYNC | Bash, Linux Utilities

- Developed for automating **real-time synchronization of files and folders** from a local system to GitHub as a **service**
- Implemented **service functionalities** - start, stop, status, restart, enable, & disable, with innovative selective-start/stop
- Elevated user experience and ease of use through efficient troubleshooting and intuitive **colored logs management**

### • Code Runner | Bash, Vim

- Developed for Linux & Unix users, streamlining **compilation and execution of code** in various programming languages
- Provided convenient installation by making the tool readily available on **Homebrew** and **AUR** (Arch User Repository)

- Implemented Python version detection with an accuracy rate of **90%**, guaranteeing smooth programming experience
- Integrated **Vim and VS Code keybindings**, optimizing the development flow for seamless programming experience
- Integrated a **debugging mode**, enabling streamlined troubleshooting for enhanced software developer experience

## Positions of Responsibility

- **Maintainer | Metakgp, IIT Kharagpur**
  - Maintained various critical **open source projects** for student community of IIT Kharagpur easing out their daily needs
  - These projects include **gyft** - timetable downloader, **kronos** - semester grade distribution, **metawiki** - IIT Kharagpur wikipedia
  - Maintained all the servers related to above and other projects on **DigitalOcean** and DNS server using **Terraform** on GitLab
- **Technology Coordinator | Technology Students' Gymkhana, IIT Kharagpur**
  - Oversaw **technological advancements** & led a **tech team of 6 developers** at IIT Kharagpur; maintaining multiple projects
  - Assisted in resolving **over 200** student complaints every month, related to internet connectivity throughout the campus
  - Configured & Managed an on-premise server running **Proxmox** as a Type 1 Hypervisor, hosting various projects for TSG
  - Maintained multiple projects : **ApnaInsti** app, Inventory Management System, **TSG website**, Gymkhana Blogs using **Ghost**
  - Developed a **dashboard** for TSG website & ApnaInsti mobile app for dynamic data update and mass certificate generation
  - Acted as **Executive Head of Developers' Society** working with **72+** members promoting development culture on campus
- **Executive Head, FOSS Club Lead | Kharagpur Open Source Society, IIT Kharagpur**
  - Organised **multiple student workshops**, promoting the adoption of open source and raising awareness among students
  - Organised KWoC-(22 and 23) (**Kharagpur Winter Of Code**) a month long event with **1.2k+ & 2.5k+** participants respectively
  - Developed **automated** workflows for **internal processes**, including **certificate generator** for KWoC and various PORs

## Technical Skills

<b>Languages</b>	Golang, Python, Typescript, JavaScript, C/C++, Bash, R, Java, LaTeX, HTML, CSS, Lua
<b>Frameworks</b>	Go-Fiber, Flask, Django, Node.js, Express.js, Hyperledger Fabric
<b>DBMS</b>	PostgreSQL, MongoDB, MySQL
<b>DevOps</b>	Computer Networking, Docker, Nginx, Linux System Administration, Amazon Web Services (AWS), Redis
<b>OS Platforms</b>	Linux 5/6 (Debian, Ubuntu, Fedora, NixOS), Unix (FreeBSD, OpenBSD, Solaris-8,9,10 & MacOS X)
<b>Blockchain</b>	Metamask Snaps, Hyperledger Fabric, Solidity
<b>Others</b>	Git and GitHub, Proxmox, Backend Development, Web Browser Extension Development, Penetration Testing (Cyber Security), Object Oriented Programming, Gurobi and CPLEX Optimisation