Dhanvith Nayak

✉ dhanvithnayak@proton.me 📞 93805 04857 🔗 dhanvithnayak.github.io in dhanvith-nayak ⌗ dhanvithnayak

Education

Indian Institute of Technology, Kharagpur   *Aug 2023 - Apr 2027*
BTech in Industrial and Systems Engineering
- CGPA: 8.27/10.0

Experience

Research Intern   *Manipal, Karnataka*
Invenger Technologies   *May 2024 - Jul 2024*
- Developed a deep learning model to automate **segmentation and detection of abdominal ulcers** from CT scans
- Achieved an **accuracy of 80%** using ResNet18 for 2D CNN classification and nnU-Net for accurate medical segmentation
- Optimized size and latency via **quantization** and **ONNX export** enabling deployment in low-resource environments

Projects / Contributions

LibAFL | Cross-Platform Fuzzing Library   *Nov 2024 - Mar 2025*
- Resolved critical issues of a multi-platform fuzzing framework built in Rust used by **10,000+ researchers** worldwide
- Engineered corpus de-duplication, reducing memory usage by **at least 50%** in cases of duplicate reported target crashes
- Developed feature to share objectives among distributed fuzzing nodes, **improving performance by more than 30%**
- Implemented support for remote execution of testcases, improving **testcase execution speeds by 50%** for slow targets
- Engaged with the community to understand the fundamentals of **software fuzzing** and **vulnerability detection**

Naarad | Pub-Sub Notification Service   *Jun 2024 - Aug 2024*
- Deployed a customised version of **NTFY** - a noticeboard service for IIT KGP students - **serving 5000+ students**
- Managed deployment with **Docker**, utilizing **Github Actions for CI/CD**, scaling for **over 15,000 users**
- Maintained a custom NTFY image with a **cross repository workflow trigger**, deploying once the image is updated
- Implemented a user registration system by integrating **JWT authentication** via institute mail and **Nginx rules**

MFTP | Placement Portal Noticeboard Scraper   *Jun 2024 - Aug 2024*
- Developed a service delivering students **real-time placement portal notices**, ensuring no missed critical deadlines
- Integrated with **SMTP, Gmail API & NTFY** for timely delivery of notification emails within 1 minute of posting
- Implemented support for **file attachments, link parsing and tagging** of web push notifications for server-side filtering
- Mentored **multiple contributions** from students from and outside of IIT KGP under **Kharagpur Winter of Code**

Glint | Rapid OpenGL Prototyping Framework   *Aug 2023 - Nov 2023*
- Developed a production-ready OpenGL application enabling **rapid graphics prototyping with minimal setup**
- Implemented a **reusable Shader class** for streamlined GLSL handling, and a **3D virtual camera** with free movement
- Assembled robust support for **3D model loading** supporting multiple formats across platforms for flexible asset pipelines
- Enabled **shader hot-reloading** for instant feedback and streamlined dependency management using **Git submodules**

Green Travelling Purchaser Solver | Green Supply Chain Calculator   *Feb 2025 - Apr 2025*
- Developed a Solver for the **Green Travelling Purchaser Problem** using CPLEX Optimizer and Matlab
- Designed a **linear optimization model** to reduce carbon footprint while also reducing cost of travelling to supply nodes
- Achieved optimal result for both fronts of the problem through **Weighted Comprehensive Criterion Method**
- Attained a deviation of **only around 5%** compared to the ideal optimal cost of travelling between supply nodes

Positions of Responsibility

Head of Research and Development | Computer Graphics Society, IIT Kharagpur   *Oct 2025 - Present*
- Headed a student research team developing novel graphics techniques and its applications, including fluid simulations, advanced Graphics, Shader and GPU programming, Deep Learning, and Virtual Reality/Augmented Reality applications

Executive Member | Kharagpur Open Source Society, IIT Kharagpur   *May 2025 - Present*
- Conducted **Kharagpur Winter of Code (KWoC)** a month-long event with **2500+ participants** and **60+ projects**
- Organized **hands-on workshops and tutorials** to familiarise students with Git/Github, Linux and Cybersecurity

Skills and Expertise

Languages: Rust, C/C++, Python, C#, JavaScript, TypeScript, SQL, Golang, Bash, Lua, HTML, CSS
Frameworks and Databases: Node.js, React, Next.js, Astro, PostgreSQL, SQLite, MongoDB, Redis, .NET, Solidity
Tools and Platforms: Linux, Git/Github, Docker, Docker Compose, Unity, AWS EC2, DigitalOcean, Nginx