Aahlaad Mantravadi

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EDUCATION

International Institute of Information Technology, Naya Raipur   **GPA: 8.49/10**
Bachelor of Technology, Computer Science and Engineering   *Dec. 2021 – June 2025*
Relevant Coursework: *Software Engineering, Deep Learning, Operating Systems, Database Management Systems*

WORK EXPERIENCE

Software Developer Intern   *Feb 2025 – July 2025*
RCI, Defense Research and Development Organisation
Hyderabad, Telangana, India

- Led development of a **Graphical User Interface** for simulating On-Board Computers in **Avionics Systems**. The software supports multiple communication protocols with error handling for lossless data transmission.
- Built in **C** with **Windows API** for interfacing with hardware and **OpenGL** for real-time data visualization. Designed a **multithreaded** architecture to boost responsiveness and throughput, delivering **60%** improvement.

Developer Intern   *May 2024 – July 2024*
RCTS, IIIT-Hyderabad
Hyderabad, Telangana, India

- Developed an **Action Recognition** model to recognize students' actions such as reading, writing, and sleeping in classroom video feeds, while addressing low resolution and obfuscation using **Masked Video Distillation**.
- Participated in creation of a **custom dataset** for 15 behaviors across different classroom settings, enabling fine-tuning of the AI model for real-time tracking, individual behavior detection, and group activity analysis.

PROJECTS

Unified Messaging Gateway | JavaScript, Node.js, TCP, HTTP

- Built a TCP **echo server** using Node.js sockets with async/await and promises for async I/O, byte streams, and buffers, along with an HTTP server generating dynamic content via asynchronous generators.
- Created a static **file server** with range request support, caching, and compression using stream and pipe abstractions, integrating **WebSocket** communication with message-based design and blocking queues.

Custom Linux Debugger | C++, Linux, ptrace, ELF, DWARF

- Implemented a lightweight **debugger** core in C++ on Linux using **ptrace** for process control, enabling dynamic **breakpoint** management, single-step execution, and signal handling with minimal performance impact.
- Designed **ELF/DWARF** parsers for source-level debugging which enabled precise stepping, call-stack backtraces, and live inspection of variables and registers while using a **Makefile** for the build process.

C++ Neural Networks | C++, CUDA

- Built a Neural Networks framework in C++ using explicit **matrix multiplications**. Implemented Forward Pass, Backpropagation, Activation Functions, Optimizers, Convolution, Pooling and K-Fold Cross Validation.
- **Parallelized** training on **GPU** architecture using **CUDA** and achieved 83.6% accuracy on CIFAR-10, matching the performance metrics of Tensorflow implementation using the same model architecture.

SKILLS

- **Languages:**   C++, Python, JavaScript, Java
- **DevOps:**   Linux, Windows, Git, Docker, SQL, Make
- **Frameworks and Tools:** Windows API, Node.js, CUDA, REST API, Tensorflow, MySQL, NoSQL

EXTRACURRICULAR EXPERIENCE

- Achieved a rank of 847 out of 1,23,967 candidates in Computer Science & Information Technology in GATE 2024.
- Acted as Student Head of Institute's Innovation Council (*December 2023 to May 2024*).
- Acted as the Vice President of the Ciphercell club (*May 2022 to May 2023*).
- Classic Carnatic vocalist for more than 10 years and performed at multiple events broadcast live on television.