# Aadeesh Jain

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## Education

**Indian Institute of Technology Kanpur** — Kanpur, India
*B.Tech in Civil Engineering;* ***GPA: 7.8/10*** — *July 2019 – May 2023*

## Skills

**Languages:** C++ (11/14/17), C, Python, Bash, R, MATLAB

**Technologies:** Git, Linux, CMake, GitLab CI/CD, pandas, OpenCV, PyTorch, TensorFlow, Vim, MQTT, CUDA

**Relevant Courses:** Fundamentals of Computing, Machine Learning, Deep Learning and CV, Real Analysis, Linear Algebra, Probability and Statistics, Reinforcement Learning, OS fundamentals and multithreading

## Experience

**Siemens Technology and Services** — Bengaluru, India
*Software Developer* — *Nov 2023 – Present, Full-time*

**Smart Displays for Boiler Management Systems**

- Implemented a **TCP/IP protocol** to enable real-time interaction between the HMI and boiler controller, reducing data latency by **40%** and ensuring prompt, reliable communication.
- Engineered a **cross-platform simulation framework** eliminating the need for repeated firmware flashing, allowing seamless testing and identical performance across **Windows, Linux, and embedded hardware**
- Developed an **MQTT-based asynchronous system**, enabling users to remotely access the boiler controller while ensuring efficient data handling
- Designed the system using **MVP architecture**, integrating a state machine for structured control flow and an **LVGL-based dynamic UI**, enhancing maintainability, stability, and cross-device adaptability

**Efficient MLOps Pipeline for AI Deployment on Edge Devices** — *May 2023-Nov 2023, Full-time*

- Designed an automated **MLOps framework** to streamline dataset processing, model training, and deployment accelerating development cycles
- Optimized model deployment for **STM32** and **Analog's MAX series** by efficiently managing power modes and leveraging hardware accelerators, ensuring seamless compatibility and low-latency inference
- **Achieved a 4x reduction** in model size using **Quantization-Aware-Training (QAT)**, enabling deployment on low-power IoT devices with **less than 2% accuracy deviation**
- Validated the **AI pipeline** on real-world applications, training **Keyword Spotting (KWS)** for speech recognition and **YOLO** for real-time object detection

**Siemens Technology and Services** — Bengaluru, India
*Research Intern* — *May 2022 – July 2022, Internship*

**High-Performance Image Processing with CUDA: Optimized Blockwise FFT & Statistical Computation**

- Accelerated image processing through a **single-kernel DFT** implementation, reducing execution time from **284ms** to **32ms** for 480p images, outperforming **CuFFT's multi-kernel** approach
- Implemented **blockwise parallelization**, improving FFT and statistical metric computations while minimizing kernel launch overhead
- Optimized memory usage by leveraging **shared memory and constant memory**, reducing latency for large-scale image processing on **NVIDIA GTX 1080**
- Enhanced **blockwise FFT performance**, achieving a **2x speedup** on higher-resolution images compared to CuFFT, by reducing redundant memory operations

## Projects

**Time Series Data Refinement and Transformer-Based Fault Detection** — *Sept 2024-Feb 2025*

- Developed a **time-series analysis pipeline** to assess dataset feasibility, ensuring minimal external influence using **statistical tests** before predictive modelling
- **Designed a data pre-processing framework**, dynamically adding covariates to enhance **zero-shot inferencing** in time series foundation models, leading to a **15%** improvement in baseline prediction accuracy
- Fine-tuned **TimesFM & GTT-Client** (Time Series foundation models), reducing false positives **by 25%** and improving anomaly detection to **94%**.

**Automated testing of Fire Safety Panels** *Oct 2024-Present*

- Developed an **industrial automation system**, integrating a **robotic arm, camera, microphone**, and display for autonomous operation
- Built **hardware control APIs & web UI** for remote access, with **OCR for text extraction** and **LED status detection** for real-time monitoring
- Enabled the robotic arm to **autonomously execute action commands** by interacting with buttons and display, eliminating manual supervision

## Hackathons & Competitions

**Aavishkar'25** *June 2025*

*Winner* *Siemens Technology and Services*

- Designed a **non-intrusive HMI testing framework** for embedded touchscreens, enabling concurrent functional and logic testing without disrupting controller communication
- Developed a **custom UART-based protocol** to transmit test actions and receive image responses, operating alongside live system data with no interference
- Built a host-side **orchestrator agent** to interpret business logic, execute test flows, and generate annotated reports with screenshots for full test traceability

**Innovathon'24** *July 2024*

*Finalist* *Siemens Technology and Services*

- Built a **Bluetooth Mesh Network** to interconnect sensors and relay data to a central PC seamlessly
- Placed **temperature, humidity, and air quality sensors** across the workspace for real-time data collection
- Generated **dynamic heatmaps** to visualize spatial temperature variations in real-time
- Formulated an **optimization problem** to efficiently place sensors, minimizing count while ensuring accurate heatmap generation for **HVAC control**