# Avish Aviraj Jha

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## Education

**Carnegie Mellon University (CMU) - School of Computer Science** **Dec 2025**
*Master of Science, Computer Software Engineering in Scalable Systems,* ***QPA: 4.17/4*** *Pittsburgh, PA*

- **Teaching Assistant**: 17-614 Formal Methods
- **Relevant Coursework**: Cloud Computing, Engineering Data Intensive Scalable Systems, Design Patterns, API Design.

**Vellore Institute of Technology (VIT)** **Aug 2023**
*Bachelor of Technology in Computer Science and Engineering,* ***GPA: 3.82/4.00*** *Vellore, India*

## Industry Experience

**Snap Inc. (Snapchat)** **Aug 2025 – Dec 2025**
*Software Engineering Intern (Practicum / Capstone)* *Pittsburgh, PA*

- Architected and developed a novel **XR remote desktop PoC app for Snap Spectacles** from scratch (C++, OpenXR, VNC), enabling real-time desktop streaming and interaction in 3D space, achieving **avg. p25-75 of 51.7 FPS, 138ms latency, and 21.8% CPU utilization** on resource-constrained AR hardware.
- Engineered adaptive VNC streaming pipeline with **tear-free double buffering and adaptive encoding**, reducing bandwidth **97% (27 MB/s to 800 KB/s)** while maintaining visual quality for high-resolution desktop mirroring.
- Implemented **hand-tracking system** with dual-pinch gesture recognition for **6DoF display manipulation and pinch-to-click/drag cursor control**, enabling intuitive hands-free interaction with the remote desktop.
- Developed multi-threaded **keyboard pipeline** supporting physical input devices (**Linux evdev** to X11 keysym translation) and a rendered **virtual keyboard** for on-device text entry via VNC.
- Drove full-life-cycle engineering by running stakeholder interviews (use cases), wrote **requirements and made C4-style architecture**. Also, practiced Agile (planning poker, sprint planning, rotating Scrum master) and TDD; created roadmap (audio, input, security) for production readiness.

**Siemens Healthineers - Ultrasound Division** **Jun 2025 – Aug 2025**
*Software Development Engineer Intern* *Issaquah, WA*

- Centralized observability for **120+ modules** by architecting an LLM-powered migration system, building a C# legacy log detector using **AST parsing to analyze C#/C++** codebases and using **Claude agents** to auto-generate OpenTelemetry-compliant code, migrating **13,000+ loggers** and unifying 4 fragmented logging systems in 10 weeks.
- Established division telemetry standard by designing **custom OpenTelemetry exporters** with backward-compatible legacy access and deploying observability pipeline **(OTel Collector, Prometheus, Grafana, Loki)**, enabling centralized debugging across previously siloed systems.
- Resolved **3.5-year .NET modernization blocker** by leading test framework evaluation with 7 PoCs, finally building a Python/PowerShell automation with anti-pattern auto-correction, and migrating **28,700+ tests** across 20+ modules from .NET 4.8.1 to 8.0 and MSTest V1 to V3, preventing EoL support issues for MSTest V1.
- Recovered lost-source security module (Syngo Classic) via **Ghidra reverse engineering**, bypassing hardcoded certificate expiration in 20-year-old binary using C++/JS workarounds and preventing 2027 service outage for **1000+** deployed medical devices.

**Addverb Technologies** **Jan 2023 – Jul 2024**
*Software Engineer - Simulations, Optimization & Analytics* *Delhi NCR, India*

- Developed a **highly performant** SpringBoot app to communicate with Addverb's own conveyor control hardware **replacing OPC** (Kepware), as a **middleware** to the monitoring frontend, & the Warehouse Execution System.
- Performed 230+ GTP (Goods To Person) **simulations and data analysis to match throughput** for 4 client solutions. Built virtual order orchestration, **clustering** of order bins for efficient packing & SKU totes to **minimize GTP starvation**.
- Designed spec for end-to-end warehouse solution for a new client covering complex supply chain, including the complete process flow resulting in a **120 page functional specification** document with over **78 wireframes** and Data Flow Diagrams.
- Optimized pick face efficiency logic modules for a **USD XX million** client project based in the US with daily order book's fulfillment simulation run time dropping from **32 hrs to under 12.5 hrs**.

**Athabasca University, Canada** **May 2022 – Aug 2022**
*MITACS Graduate Research Intern* *Edmonton, Canada*

- Created a **multi-modal learning framework** for better experience and management of digital student involvement, in collaboration with a Master's student and 3 summer classes for live testing and feedback.
- Architected a **responsive dashboard in native JavaScript and Bootstrap** to track students' progress over time to improve organizational skills, progress against other students to increase motivation and track total login time and frequency.
- Transformed and integrated **3 deep learning models** to gather insights in a live MLOps pipeline via AWS for professors.

**Ernst & Young** **Jan 2022 – Apr 2022**
*Technology Consulting Intern* *Kolkata, India*

- Built a machine learning based web dashboard with **SAP Leonardo**, increasing decision-making efficiency of the team.
- Transformed client operations with different actionable insights from cleaning & analyzing 800+ MBs of data across a 3 month period.

**Tata Steel** **Jun 2021 – Aug 2021**
*Intern / Vocational Trainee* *Jamshedpur, India*

- Made from scratch an IoT seeded **fully dynamic web dashboard in VueJS**, to track and manage machinery IoT devices within Plant operation to give early warning signals on temperature, vibration, current.
- Managed over **190+ devices remotely** while polling in a secure internal network on Wired Local Area Network.

## Research Publications

**IEEE: 7th CSI-TSS, 2023** | *Python, MNE, Multiple EEG Extractors* **Mar 2023 - Sep 2023**
*Harnessing Creative Methods for EEG Extraction & Modeling in Neurological Disorder Diagnoses* 🔗 *Vellore, India*

**IEEE: 7th CSI-TSS, 2023** | *Python, OpenCV* **Jan 2023 - Sep 2023**
*Enhancing Visibility: Multiresolution Dark Channel Prior for Dehazing and Fog Removal in Images* 🔗 *Vellore, India*

**Springer: 4th ICICIT, 2021** | *Python, Various Libraries* **Apr 2021 - Jan 2022**
*Randomised Analysis of Backtracking-based Search Algorithms in Elucidating Sudoku Puzzles* 🔗 *Vellore, India*

**IEEE: ic-ETITE, 2020** | *Python, Embedded C, Arduino, Raspberry Pi, Sockets* **Oct 2019 - Feb 2020**
*Automated Detection Of Driving Pathway Using Image Processing* 🔗 *Remote*

## Projects

**MFC Recruitment Portal: Frontend** | *VueJS, Axios, Cloudflare, Netlify* 🔗 **Nov 2020 - Jan 2021**

- Reimagined the frontend for MFC's recruitment portal for candidate tests across 5 domains, handling a peak of *1200+ applicants*.
- Assembled a Progressive Web App handling over 100+ concurrent tests, deployed on Netlify, & Cloudflare.

**SEDS India: Full Stack & Webmaster** | *HTML / CSS, JavaScript, jQuery, Netlify, Cloudflare* 🔗 **Aug 2020 - Dec 2021**

- Unified 4 previous portals, setup *CI/CD* via Netlify, and *CDN / security* via Cloudflare.
- *Reduced OpEx by 40%* via revamped email management and improved configurations on our hosting provider.
- Spearheaded the management of *7 websites, 180+ emails, and 3+ domains*, optimizing operations for efficiency.

## Skills, Awards & Roles

**Languages**: Java, Rust, Python, C++, C#, SQL, NoSQL, LaTeX, HTML/CSS, JavaScript, TOML, YAML, GoLang, TypeScript, C, R, JSON.
**Tools / Technologies**: VS Code, Azure, Docker, Kubernetes, Linux, Git(Hub/Lab), TensorFlow, VueJS, AngularJS, SpringBoot, Puppeteer, Nightwatch, Kafka, RabbitMQ, Redis, Back End Development, Full Stack Development, MongoDB, Test Automation, MSTest, Grafana, Prometheus, Loki, Open Telemetry, OpenXR, LibVNC, Playwright.
**Leadership**: Team Management, Coordination, Prioritization, Problem Solving, Initiative.
**Awards & Roles**: Special Achiever's Award at VIT, Treasurer at MSE Leadership Initiative (CMU), Committee on Student Organizations (CMU), Board Chairperson at Mozilla Firefox Club (VIT), Projects Head at Sigma Xi Research Society (VIT).