

SUMMARY

Graduate student in Computer Science, with proficiency in High Performance Computing, Software Engineering and Embedded Systems. Seeking full-time internship/co-op roles for Summer 2024 in the industry for Firmware and Software Engineering roles.

EDUCATION**Master of Science in Computer Science****Aug 2023 – May 2025**

Arizona State University, Tempe, Arizona.

Academic Coursework: Advanced Operating Systems, Advanced Computer Networks**Bachelor of Technology in Electronics and Communication Engineering****Aug 2019 – May 2023**

NIT Surat, Gujarat, India

Academic Coursework: Advanced Processor Architecture, Microprocessors and Microcontrollers, Embedded Systems, Computer Architecture**TECHNICAL SKILLS****Programming languages:** C/C++, HTML/CSS, Javascript, Java, Assembly language, Python, MATLAB, Embedded C.**Skills:** Pytorch, TensorFlow, Machine Learning, Artificial Intelligence, Big Data, Computer Vision, Frontend Development, D3.js API, Data Structures and Algorithms, Multithreaded programming, CUDA programming, High performance computing, GNU/Linux, Unix, Git, Operating Systems.**PROFESSIONAL EXPERIENCE****High Performance Computing Intern at GMRT, Pune, India****May 2022 – July 2022**

- Spearheaded a high-performance computing project focused on time series signal processing, overseeing the design and implementation of algorithms to optimize processing speeds.
- Utilized multithreading techniques to parallelize time series signal processing algorithms, significantly improving computational efficiency and reducing processing time by 10%.
- Developed and optimized CUDA kernels for GPU acceleration, harnessing the parallel processing power of NVIDIA GPUs to achieve remarkable speedup of 100% in time series data filtering.
- Implemented advanced optimization strategies, including shared memory usage and warp divergence mitigation, to fine-tune CUDA kernels for optimal performance on specific GPU architectures.

Embedded Systems Intern at Makers Lab, Tech Mahindra, Pune, India**June 2021 – Sept 2021**

- Implemented sensor interfaces for monitoring soil moisture, temperature, and humidity, enhancing precision agriculture practices and optimizing irrigation strategies.
- Implemented power-efficient algorithms and low-power modes to extend the battery life of embedded sensor nodes, enabling prolonged field deployment without frequent maintenance.
- Developed communication pipelines utilizing wireless protocols such as Zigbee and HTTP over GSM to transmit sensor data to a central server, ensuring seamless connectivity across the agricultural field.

ACADEMIC PROJECTS**Adding modern features to xv6 Operating System****Aug 2023**

- Integrated a secure boot mechanism into the xv6 operating system, ensuring the integrity and authenticity of the boot process by validating the bootloader and kernel signatures before execution.
- Implemented virtual memory support through paging, allowing for efficient memory management and enabling swapping to disk when physical memory becomes limited, improving overall system stability.
- Designed and implemented a self-threading mechanism to enable dynamic thread creation within the xv6 operating system, enhancing its multitasking capabilities and supporting concurrent execution of multiple threads.

Edge based video super resolution on FABRIC**Aug 2023**

- Developed a comprehensive framework for edge-based video super resolution using P4-enabled data plane switches, aiming to enhance the visual quality of streaming video content in real-time while maintaining reduced network load.
- Implemented optimized packet processing routines in P4, focusing on efficient handling of video frames and the extraction of relevant features for the super resolution algorithm.

Evolutionary computing techniques for Analog Circuit Sizing**May 2023**

- Researched and selected state-of-the-art heuristic optimization algorithms, including genetic algorithms, simulated annealing, and particle swarm optimization, tailored for analog circuit sizing. Implemented different techniques in genetic algorithms with ring-selection and particle swarm optimization in python to find the most optimum set of transistor sizes for a given circuit.
- Conducted convergence analysis to assess the efficiency of each heuristic algorithm, studying the trade-offs between convergence speed and solution quality for different types of analog circuits.

Smart bicycle module for rental business model**May 2022**

- Led the design and development of the embedded system for a smart bicycle module, enabling automated locking and unlocking of the bike. Implemented real-time control logic and sensor integration to enhance user experience, security and convenience.
- Successfully integrated GPS technology to enable real-time location tracking for the smart bicycle module. Implemented efficient algorithms for location-based services, enhancing user safety and allowing clients to locate their bikes with precision.

POSITIONS OF RESPONSIBILITY**Chairperson, IETE Students' Forum - SVNIT****May 2021 – May 2022**

- Was previously an executive at ISF-SVNIT for a year when I helped in planning and conducting multiple events like quizzes and seminars in online mode during COVID times.
- Later got promoted to the chairperson of the student chapter, where I had to organize and plan events while coordinating with the faculty and other core committee members, managing a team of junior executives and conducting events with the given budget.

Member, Literary Affairs Committee - SVNIT**May 2021 – May 2023**

- Was an executive member of the club involved in quizzing, debating, and orating events where I planned as well as participated in multiple events for the development of my soft skills, later also mentoring incoming juniors for the same.
- Was also a core organizing member of a Literature Festival at the university, leading the entirety of the event planning and execution group, including inviting guest speakers and judging debate competitions.