[redacted]

EDUCATION

Vellore Institute of Technology, Vellore, Tamil Nadu — Enrolled: September 2020 — Expected: May 2024
B.Tech in Electronics and Communication Engineering — GPA:7.92

PROFESSIONAL EXPERIENCE

[redacted] — Gurugram, Haryana
Embedded C Development Intern — May 2023 - June 2023

Description: As the sole contributor to the Electronics Department [redacted] an innovative event management company specializing in technological event booths, I played a pivotal role [redacted] reating, designing, and implementing various cutting-edge projects. Collaborating closely with the planning team, I actively participated in brainstorming sessions to conceptualize functional event booths, including projects such as a quiz buzzer system, dynamic wall art, and RFID-based interactive systems.

- **Cost Efficiency:** Spearheaded in-house development of multiple circuits and systems, resulting in a remarkable reduction of component costs by up to **80%**. This initiative significantly contributed to the company's financial efficiency and project profitability.
- **Time Management:**Thrived in a fast-paced environment by successfully working on a time crunch, ensuring the timely delivery of projects. My ability to meet deadlines positively impacted the company's reputation for reliability and efficiency.

[redacted] — Pune, Maharashtra
Project Trainee — June 2022 – August 2022

Description: At th[redacted]ors, I undertook a dynamic role in the development of an infotainment system for an upcoming electric vehicle. Initially tasked with comprehending the hardware intricacies of the system, I quickly transitioned to the software domain, where I played a crucial role in shaping the project's technological direction.

- **Software Deployment Strategy:** Faced with the decision of building the software on Linux from scratch or utilizing Android Auto, I conducted extensive research and analysis to determine the optimal deployment strategy. My findings, which were reported to the manager, revealed that developing the system in-house by licensing and leveraging native Android Auto-based libraries would result in a 40-45% cost reduction compared to outsourcing to external agencies.
- **BMS Implementation:** In the second phase of the internship, I delved into the intricacies of a Battery Management System, successfully setting up a third-party BMS tailored to the specific needs of the company. This involved a comprehensive understanding of BMS functionality and seamless integration into the electric drivetrain.

RESEARCH EXPERIENCE

ReRam Based AI Accelerator for Convolutional Neural Networks
Ongoing Research topic and Capstone Project — November 2023 - Ongoing

Description: Currently engaged in research focused on the development of an AI accelerator utilizing Re-Ram based Vector Matrix Multiplication (VMM) design within the Cadence environment. The primary objective is to harness the potential of analog computing and In-Memory Computation to enhance the speed and efficiency of multiplication and addition operations at the circuit level.

- **Collaborative Effort:** Working in collaboration with a multidisciplinary team consisting of a research scholar from another university, a fellow peer, and the VLSI faculty at Vellore Institute of Technology. This collaborative effort brings together diverse expertise to address the challenges and opportunities in the development of novel AI accelerators.
- **Circuit Design in Virtuoso:** Employing Cadence Virtuoso for the design of the Re-Ram based VMM multiplier circuit. This involves intricate work on the circuit layout, considering the unique properties of Re-Ram technology to optimize performance.
- **Python Modeling:** Utilizing Python to create a comprehensive model of the circuit, allowing for efficient analysis of various parameters affecting the accuracy of the neural network. The integration of a LeNet 5 neural network as a standard test case provides a robust framework for evaluating the circuit's performance.
- **Nonlinear Parameter Mapping:** Through the Python model, mapping nonlinearities in circuit parameters to understand their impact on the neural network's output. This critical analysis serves as the foundation for developing compensation strategies at the circuit level, ensuring improved accuracy in neural network computations.

Empowering Inclusive Communication with the Haptic-Enabled Language to Pulse Device: A Novel Assistive Technology Solution for Communicative Impairments
Accepted for Publication as a Chapter in the book "Advanced Computing Systems for Healthcare" by Bentham Publishers

Description: Instrumental collaborator in a transformative research project focusing on accessibility for the visually impaired. The project introduces a cost-effective solution, achieving a remarkable 99% cost reduction compared to traditional surgical procedures.

- **Software Deployment Strategy:** Played a pivotal role in developing a cost-effective solution for aiding the visually impaired, showcasing a groundbreaking achievement with **upto 99%** cost reduction compared to surgical alternatives. This impactful innovation emphasizes a commitment to accessible and affordable technology solutions.
- **Python Coding Expertise:** Contributed to the project's success through my proficiency in Python coding. This involved developing and optimizing code to ensure the seamless functionality of the device. The Python coding aspect underscores the importance of software innovation in achieving impactful results.
- **Component Selection and Hardware Assembly:** Played a hands-on role in the selection of components and the assembly of hardware. This involved a keen understanding of the project's requirements and effective collaboration with the team to ensure the integration of chosen components. My involvement in the hardware aspect reinforces a holistic approach to technology implementation.

Workers' Safety and Well-being in Hazardous Environments: An IoT-Based Approach
Yet to be Published
Description: Key contributor to a groundbreaking research study in mining environments, actively engaging in Python programming and leveraging multiple libraries to perform complex clustering and data analysis. My role significantly influenced the identification and quantification of crucial metrics that formed the basis of the research findings.

- **Python Data Analysis:** Applied advanced Python programming skills and utilized various libraries to conduct intricate clustering and data analysis. This involved the identification and quantification of key metrics crucial to the research findings, demonstrating proficiency in leveraging Python for complex analytical tasks.
- **Cross-Disciplinary Analysis:** Conducted an in-depth analysis of research papers from a medical background, aiming to correlate their findings with the insights derived from the mining environment study. This cross-disciplinary approach enriched the research by providing a broader context and potential implications for the health and safety of miners.

PROJECTS

Safety Helmet for Miners Python, Sci-Kit Learn, KaaIoT
Project Link: https://

- This project addresses the inherent risks in mining operations by introducing a safety helmet equipped with sensors. The helmet collects real-time data, including methane concentration, temperature, humidity, and GPS coordinates, using an integrated suite of sensors. The gathered data is then analyzed and used to predict safety hazards in mining environments. Machine learning techniques, specifically the RandomForestRegressor, are employed to predict methane concentration, temperature, and humidity.

Face Recognition Based Mobile Attendance Robot Python, OpenCV
Project Link: https://

- This project involves creating an attendance-taking robot using OpenCV and a Raspberry Pi. The robot is equipped with motors and wheels, and its movement is controlled by an Xbox controller. Additionally, the project features face recognition for attendance tracking.

Garden Monitoring System Arduino IDE, C++
Project Link https://

- This Arduino project is designed to create a smart room system using various sensors and actuators. The system incorporates a temperature sensor, a light sensor, and a distance sensor to perform different functions based on the environmental conditions.

SKILLS

- **Relevant Coursework:** VLSI System Design, Neural Networks and Fuzzy Control, Microcontroller and its Application, Robotics and Automation, Digital Logic Design
- **Programming:** Verilog, Python, Java, C/C++, LaTex
- **Software:** Cadence Virtuoso, LT Spice, ModelSim, VS Code, Arduino IDE, Google Colaboratory, Eagle CAD, Proteus
- **Soft Skills:** Effective Communication, Team Collaboration, Adaptability, Problem Solving, Time Management, Leadership