Aravind Karthik R

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Mission

"Imagination is more important than knowledge." This quote by Albert Einstein has always resonated with me, as it captures the essence of innovation and progress in the field of technology. My mission is to channel my passion for embedded systems into contributing to cutting-edge advancements, particularly in healthcare and complex medical applications. With over a year of research and industry experience in Embedded Systems, Machine Learning, and IoT, I aim to apply my expertise in C, C++, Python, CUDA, and digital communications to develop state-of-the-art systems and embedded software solutions that push the boundaries of technology.

- Aravind Karthik R

Professional Summary

- **Research**: 1+ years of experience innovating in Embedded Systems, Machine Learning, and IoT at VIT Chennai and IISc Bengaluru, pushing the frontiers of healthcare technology.
- **Education**: Currently pursuing a Bachelor's in Electronics and Computer Engineering with a Minor in Management, graduating in 2025.
- **Industry**: Extensive experience in designing embedded systems, software development, communication protocols, and PCB design for industrial applications. Proficient in high-performance computing, sensor integration, and real-time embedded solutions.

Experience

- **Indian Institute of Science (IISc)** — Bengaluru, India
  Research Associate Intern — *June 2024 - Present*
  - **Roles and Responsibilities**: Conducting research and development in embedded systems, machine learning, and high-performance computing for advanced medical image processing and signal processing; Designing and fabricating PCBs for high-precision embedded hardware systems; Collaborating with 3+ cross-functional teams to drive innovation in the development of medical-grade electronic devices, adhering to industry standards for performance and reliability.
- **Stemtec AI & Robotics Pvt Ltd.** — Chennai, India
  Embedded Systems & IoT Intern — *March 2024 - June 2024*
  - **Roles and Responsibilities**: Engineered firmware for microcontrollers using C/C++ for sensor interfacing, data acquisition, improving system data accuracy by 20%; Designed and assembled multi-layer PCBs with SMD soldering for IoT-enabled embedded systems, reducing prototype assembly time by 25%; Integrated BLE and LoRa into IoT architecture, boosting system performance by 35% and ensuring seamless wireless data transmission.
- **Highbrow Diligence Services Pvt Ltd.** — Chennai, India
  Embedded Systems & IoT Intern — *August 2023 - December 2023*
  - **Roles and Responsibilities**: Engineered embedded systems for real-time data acquisition and analysis, achieving a 25% improvement in system reliability and performance; Integrated communication protocols (SPI, I2C) for seamless hardware-software interaction in medical devices, reducing inter-communication errors by 15%; Designed firmware in C/C++ for microcontroller-based automation, significantly enhancing the operational efficiency and accuracy of medical embedded systems by 50%.

Programming

- **Languages**: C & C++, Python, Embedded C, VHDL, ARM assembly, R, MATLAB

Technical Skills

- **Tools**: CUDA, cDNN, Keil IDE, Autodesk EAGLE, Altium, Cadence Virtuoso, TeX Works, Xilinx Vivado
- **Communication**: LoRa, Bluetooth Low Energy (BLE), CAN, SPI, I2C, Fundamentals of 4G/5G, Wi-Fi

Patents

- **Detecting Neuro Developmental Status on the Autism Spectrum** — India
  Current work — *2024*

Publications

- **Smart Assistive Glasses for Aiding Individuals with Dyslexia** — India
  Current work — *2024*

Education

- **Vellore Institute of Technology** — Chennai, India
  Bachelor's in Electronics and Computer Engineering, Minor in Management — *August 2021 – Present*
- **The Velammal International Schools** — Chennai, India
  High School Diploma — *May 2019 - July 2021*

Projects

- **Automation of Extracorporeal Blood Oxygenation and Ozonation System (EBOO)**: Automated medical device operations using SPI communication, increasing system reliability by 25% and efficiency by 50%.
- **Deep Learning-based Glaucoma Detection**: Optimized CNNs to analyze OCT images with 99.3% accuracy, enabling early detection of retinal nerve damage.
- **Efficient Traffic Management for Emergency Vehicles Using LoRa**: Reduced emergency vehicle response time by 50% through LoRa-based inter-vehicle communication.
- **Real-time Face Reaction Recognition for Customer Satisfaction Analysis**: Integrated machine learning algorithms in python integrated with embedded systems for real-time facial emotion recognition, enhancing customer satisfaction evaluation accuracy by 25% and providing actionable insights to restaurant management.

Student Chapters

- **Rotaract Club of VIT Chennai** — Chennai, India
  Director of Photography — *July 2024 – Present*
- **Photography Club of VIT Chennai** — Chennai, India
  Photographer — *July 2021 - July 2023*
- **Microsoft Innovations Club** — Chennai, India
  Technical Team Member — *July 2021 - July 2022*

Volunteering

- **Kadal Karai - Beach Cleaning Drive**: An initiative by the Rotaract Club of VIT Chennai, where we collected 200 kilograms of waste from beaches in and around the city.
- **BandVIT - TechnoVIT**: Assigned as an event photographer, with responsibilities including capturing images of 20+ events that were part of my school's tech fest.
- **WHE Fiesta**: As part of a capacity-building training session under the Basic Education and Literacy focus of Rotary, visited a village and conducted events for the local school children.
- **Shrishti - TechnoVIT**: Served as an additional event organizer, responsible for creating and implementing an audio-controlled system to reveal the event poster on behalf of the SCE of VIT Chennai.