

ARAVIND A.S

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PROFILE SUMMARY

Final-year Electronics and Communication Engineering student at NSS College of Engineering, Palakkad (KTU), with a strong foundation in PCB design, embedded systems, FPGA development, and VLSI. Experienced across three research internships at IIT Palakkad, IISER Bhopal, and IIITDM Kancheepuram, with hands-on work in electrochemical sensor circuits, biomedical device design, and voltammetry. Published researcher at IEEE ICATI-2026; 1st Prize winner at REGEN Hackathon 2025; IEEE ICEdge Student Travel Grant awardee. Active IEEE chapter leader with a track record of bridging hardware design with real-world applications in biomedical, space, and energy domains.

EDUCATION

B.Tech – Electronics and Communication Engineering | NSS College of Engineering, Palakkad (KTU) 2023 – 2027

CGPA: 7.32 | APJ Abdul Kalam Technological University | 2019 Scheme

EXPERIENCE

Summer Research Intern | IIT Palakkad May – June 2026

- Working on voltammetry research and PCB designing under the SATCARD project at IIT Palakkad.

Research Intern (Offline) | IIITDM Kancheepuram May – Jun 2025

- Developed a voice-based nasalance measurement device with bio-signal acquisition circuits and ESP32 interfacing under Dr. Rohini at THRIVE Lab.

Research Intern (Online) | IISER Bhopal May – Jul 2025

- Designed PCB layouts for cyclic voltammetry boards under Dr. Santanu Talukder (Sixth Sense Lab, EECS); performed LTSpice simulations for electrochemical sensor systems.

PCB & Embedded Systems Intern | Asnaviram Networks (Hybrid) 2024 – Present

- Contributed to PCB design, circuit optimization, and prototyping of network systems and embedded solutions.

On-the-Job Training | BSNL RTTC, Thiruvananthapuram Jan 2023

- Hands-on training in optical fiber splicing, OTDR testing, and network setup.

KEY PROJECTS

FPGA-Based Musical Note Generator | iCEPie iCE40HX1K | Verilog HDL, APIO/Yosys 2025

- Synthesized musical notes via rotary encoder-driven PWM on FPGA; paper presented at IEEE ICATI-2026 (NexoTech 2026).

Smart Guard Quadruped Robot | Mini Project | Jetson Nano, YOLOv8, Python, FastAPI 2025

- 12-DOF quadruped with computer vision (YOLO person detection), RAG-based AI assistant, and real-time web telemetry dashboard.

Smart Energy Monitor & KSEB Tariff Calculator | ATmega32U4, ACS712, KiCad PCB 2025

- Custom 2-layer PCB for real-time AC current monitoring with KSEB telescopic billing algorithm and I2C OLED display.

CubeSat Battery Management System (EPS) | TI BQ76920, ATmega32U4, KiCad 2025

- Space-grade BMS with over-charge/over-discharge protection, active cell balancing, and I2C telemetry for Li-Ion packs.

6-DOF Robotic Arm – Hand Gesture Control | OpenCV, Python, Arduino 2025

- Real-time hand gesture recognition via OpenCV driving a 6-DOF arm over serial; custom inverse kinematics for precise positioning.

Ultra-Low Power Biomedical Op-Amp (VLSI) | Electric VLSI EDA, CMOS 180nm 2025

- Two-stage CMOS op-amp for wearables: 68 dB DC gain, 100 kHz bandwidth, 1.7 μ W power, 90° phase margin.

FPGA Digital Lock System | Verilog FSM, iCE40 2025

- FSM-based secure lock with UART-driven web monitoring interface, synthesized on iCE40 using open-source toolchain.

REGEN Hackathon – AI+IoT Energy Platform (1st Prize, ₹60k) | ESP32, NASA POWER API, ElevenLabs AI 2025

- AI+IoT intelligent electricity management system with satellite energy-source mapping and voice-based AI energy assistant.

TECHNICAL SKILLS

Hardware: PCB Design (KiCad, Altium Designer), Circuit Simulation (LTSpice, Proteus), FPGA (iCE40), Embedded Systems (Arduino, ESP32, ATmega, 8051), Hardware design

VLSI / EDA: Verilog HDL, Electric VLSI EDA, APIO / Yosys / IceStorm toolchain, CMOS analog design

Software: Python, C, MATLAB, JavaScript, HTML/CSS, OpenCV, FastAPI, Git

Tools: Fusion 360, GTKWave, Tinkercad, MIT App Inventor

PUBLICATION

A.S. Aravind, K.M. Devanarayanan, K. Agesh, "FPGA-Based Musical Note Generation using a Single Rotary Encoder," IEEE ICATI-2026 (NexoTech 2026), NSS College of Engineering, Palakkad, May 8–9, 2026. (Presented)

ACHIEVEMENTS & CERTIFICATIONS

- IEEE ICEdge Student Travel Grant Award (STGA) Winner – IISc Bangalore, Oct 2025
- IEEE Silver Star Builder (Supernova) – IEEE Star Recruiters Program, 2025
- Session Coordinator – Session 2 & 10, IEEE NexoTech 2026 (ICATI), May 2026
- Speaker: Tinkercad Circuit Designing Workshop (IEEE SB LBSCEK), KiCad PCB Design Workshop (IEEE ComSoc NSSCE), Logic Circuit Design Lab – Xilinx (NSSCE)
- Certifications: Machine Python, Data Analytics, VLSI Chip Design, Microcontroller Applications, Altium Designer, MATLAB, Optical Fiber Technician

LEADERSHIP & ACTIVITIES

- Chair – IEEE ComSoc SBC NSSCE (2026-2027) | (2025-2026) Vice Chair, Technical Coordinator – IEEE SB NSSCE (2025-2026)
- (2025-2026) Social Media Manager – IEEE Computer Society Philippine Chapter; Student Lead Ambassador – IEEE R10 ACEI 2025 (May-November)
- (2025-2026) Tech Lead – IEDC NSSCE; (2025-2026) Vice Chair – ELACSTA NSSCE