

ARAVIND V BAYARI

Hardware Lead & Embedded Systems CTO | 25+ Years

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PROFESSIONAL SUMMARY

Seasoned hardware lead and embedded systems architect with 25+ years of hands-on experience spanning concept-to-production product development across HealthTech, Defence, Aerospace, Medical Devices, IoT, and Industrial Automation. Currently leading hardware development at **Kubo Care** (Antler-backed HealthTech startup, \$1M seed round), designing millimeter-wave radar-based AI health monitoring systems for senior living facilities. Co-founder of **CleaErr Tech Solutions / toN0tErr**, an embedded product consulting practice that has delivered hardware solutions for food robotics, semiconductor evaluation, and LED lighting companies. Career track record includes mission-critical systems for BHEL, BARC, HAL (LCA Tejas), GTRE (Kaveri Engine), and international clients. Designed India's only indigenous strain measurement product line at Pyrodynamics, earning the **Technology Development Board Award for Successful Indigenization** from the Department of Science & Technology, Government of India.

PROFESSIONAL EXPERIENCE

Kubo Care Pvt Ltd

2024 – Present

Hardware Lead

Antler-backed HealthTech startup (\$1M Seed, Jun 2024), founded 2023. Offices in Bangalore & San Francisco. Privacy-first radar-based ambient AI health monitoring for senior living.

- Leading end-to-end hardware design for millimeter-wave radar-based ambient health monitoring devices targeting senior care facilities across India and the US
 - Designing radar systems operating at 1–10 mW (less than 1% of WiFi power), ensuring FDA/FCC approved components
 - **Capabilities delivered:** Fall detection & prevention (gait analysis, pre-fall alerts, context classification), non-contact heart rate & respiratory rate monitoring, sleep tracking (REM/deep/light phases, bed entry/exit detection), environmental monitoring (AQI, temperature, humidity, light), two-way audio communication
 - **Gen 1.0:** Basic fall detection + environmental monitoring — **Gen 2.0:** Advanced sensor suite, fall prevention intelligence, audio module, bedside units, sleep & heart rate monitoring
 - Designed hardware platform supporting staged sensor intelligence — from motion/presence detection to behavioral pattern recognition and predictive health monitoring via embedded edge processing
 - Addressing India senior care market valued at \$12–15B, projected to grow to \$40–50B by 2030
 - Managing hardware team, collaborating with Head of Engineering, Data Scientist, ML Engineer, and Software Engineers
- Tech:** mmWave Radar, AI/ML Edge Processing, Embedded Linux, Sensor Fusion, FDA/FCC Compliance

Co-founder & CTO

“Tools to nought human error” — Embedded product consulting practice delivering concept-to-production hardware solutions for startups and SMEs.

1. I-Max — Solenoid Coil Testing Automation

Technical Consultant | Current

- Designing and developing automated testing systems for solenoid coil manufacturing quality assurance
- Customer-facing technical consultation on product queries and engineering solutions

Tech: Test Automation, Solenoid Characterization, Industrial Test Systems

2. Amberroot Systems — EV Motor Drive & Test Systems

Technical Consultant | ~2023 – 2024 (~1 year)

- Designed motor test jig and EV motor drive electronics for electric vehicle powertrain applications
- Developed CAN-based IoT logger and CAN isolator for robust vehicle communication
- Integrated magnetic rotary position sensor for high-resolution motor shaft feedback
- Led EV drive compliance testing for CE (Conducted Emissions) and RE (Radiated Emissions) certification

Tech: EV Motor Drive, CAN Bus, CAN Isolator, Rotary Position Sensor, EMI/EMC Compliance (CE/RE)

3. SupraEnergy Lighting Solutions — Connected Lighting & Test Systems

Design Consultant | May 2018 – Jan 2024

- Designed connected lighting systems with Human Centric Lighting (HCL) control — automatic color temperature tuning (2700K–6500K) synchronized to Circadian rhythm for occupant well-being in commercial and retail environments
- Developed automated burn-in test systems for LED luminaires — measuring power consumption, luminous flux (lux intensity), color temperature stability, and endurance testing for product reliability and standards compliance
- Built a goniophotometer for measuring luminous intensity distribution at multiple angles — generating photometric data for light distribution characterization, beam angle verification, and IES/LDT file generation

Tech: LED Drivers, IoT/Connected Lighting, HCL (Circadian Tuning), Burn-in Test Automation, Goniophotometry, Power & Lux Measurement

4. Freshot Robotics — Idli ATM

Hardware Lead | Feb 2019 – Oct 2020

- Led hardware design for a fully automated cooking and vending robot — the “Idli ATM”
- System handles end-to-end food preparation: ingredient dispensing, cooking, packaging, and vending
- Product went viral at Bangalore Metro stations; extensive media coverage

5. Tenxer Technologies — Semiconductor IC Evaluation Platform

Hardware Lead | Dec 2017 – Feb 2019

- Designed hardware for semiconductor IC evaluation platforms: **Blaze** and **LiveBench**
- Founded by Sridhar Joshi; platform enables rapid evaluation and characterization of semiconductor devices

iTriangle Infotech Pvt Ltd

Aug 2016 – Nov 2017

Architect, Embedded Systems Design

Largest Indian manufacturer of Vehicle Telematics hardware.

- Embedded systems architecture for vehicle telematics products including GPS tracking, OBD integration, and fleet management hardware
- Architecture ownership for next-generation telematics product line

Senior Embedded Systems Engineer

Project: Thunderboard Wear — ARM mbed Wearable Reference Design Board

- Complete hardware design & development of wearable reference platform
- Test firmware development on mbedOS
- Project management and production/contract manufacturing (CM) management
- Managed full product lifecycle from schematic capture through PCB layout to production

Tech: EFM32GG995 (Giant Gecko), memLCD display, BLE BGM111, BMX055 9-axis IMU, Si1144 Heart Rate Sensor

Tools: OrCAD Capture, Cadence Allegro, Simplicity Studio

Axiom Consulting Pvt Ltd

Aug 2011 – Jul 2015

Project Lead / Enabler — Embedded Electronics

Product development company serving FMCG, Consumer Electronics, and Medical Electronics sectors.

- Concept-to-realization ownership across 6 concurrent product development projects
- Project & program management, cross-functional team mentoring
- VDE/UL certification management and make-or-buy decision analysis

1. Illumination Ring for Colposcopy Device

- Designed illumination ring with 12× 1W high-power LEDs with individual PWM brightness control
- Precision LED current regulation for uniform illumination in medical imaging application

Tech: PCA9685 (16-ch PWM), 8051 Microcontroller, NCP3066 LED Driver, LXCL-EYW4 LEDs

2. CPAP Machine (Continuous Positive Airway Pressure)

- Respiratory ventilation device for sleep apnea treatment
- BLDC motor control with precision pressure regulation via closed-loop feedback

Tech: DRV8312 BLDC Motor Driver, MPX2010 Pressure Sensor, MSP430F5529 MCU

3. Stempeutron — Automated SVF Cell Isolation Device

- Automated medical device for Stromal Vascular Fraction (SVF) cell isolation for Stempeutics Research (Manipal Group / Cipla backed)
- Technology selection, hardware integration, and control system development

4. Package Shock Logger

- GPS/GPRS-enabled, IP65-rated, battery-powered, truck-mounted shock & vibration data logger
- Real-time monitoring and logging of transport shock events with GPS location tagging

Tech: ADXL345 3-axis Accelerometer, SIM908 GPS/GPRS Module, ATmega328 MCU

5. Lab Digitization

- LabVIEW-based framework for digitizing laboratory instruments: thickness gauge, weighing scale, torque meter
- Integrated analytics dashboard with automated report generation

Tools: LabVIEW

6. Smart Shelf — UWB Real-Time Location System

- UWB RTLS-based (DecaWave) smart storage system for chemical testing laboratory
- Temperature & humidity controlled shelving with real-time asset location tracking

Tech: DecaWave UWB RTLS, Temperature/Humidity Sensors

SoftApps Pvt Ltd

Aug 2010 – Aug 2011

Senior Engineer / Tech Lead

1. Microcontroller-based PLC

- PIC-based programmable logic controller for digital control in cement plant automation
- Closed-loop control system design and implementation

2. Modbus-based GSM Module

- AVR-based Modbus slave module with GSM/SMS alerting for industrial automation monitoring
- Remote fault notification and status reporting via SMS

Pyrodynamics

Jul 2002 – Jul 2010

Chief Engineer (8 Years)

Indian technology company — the only Indian company to design and manufacture world-class strain measurement systems.

Founded 1995, Harohalli, Bengaluru. CEO: S. Raviprakash.

- Single-handedly designed the entire SCAD product line from concept to production — India's only indigenous strain measurement systems
- Products deployed at India's premier research institutions and heavy industry clients

1. SCAD 500 — 4-Channel Strain Measurement System

- 4-channel strain measurement system with graphical LCD display, real-time clock, EPROM data storage, and RS232 interface
- Exhibited at measurement system exhibition in Germany — only Indian system, won international appreciation

Tech: 89C51 MCU, Precision ADC, GLCD, RTC, EPROM, RS232 | **Clients:** BHEL, BARC

2. SCAD 500L — 4-Channel Displacement Measurement System

- LVDT-based displacement measurement with programmable gain and excitation

Tech: AD598 LVDT Signal Conditioner, Programmable Gain/Excitation | **Client:** National Metallurgical Laboratory, Jamshedpur

3. SCAD 508 — 8-Channel Expandable Strain Measurement System [AWARD WINNER]

- 8-channel system expandable to 256 channels with LabVIEW front-end and RS232 interface
- **Awarded “Technology Award for Successful Indigenization”** by the Technology Development Board, Dept. of Science & Technology, Govt. of India (2013) — Rs. 5 Lakhs + Trophy

Tech: LabVIEW, RS232, Expandable Architecture | **Client:** Jadavpur University

4. SCAD 100 — Strain Gage Signal Conditioner Amplifiers

- Precision signal conditioning amplifiers for strain gauge bridge circuits

5. SCAD 200 — Displacement Indicator

- Standalone displacement measurement and indication system

6. SCAD Cal — Strain Calibrator

- Precision calibration instrument for strain measurement systems

7. Phase Shifter — Shearography Defect Analysis

- Laser diode controller for shearography-based non-destructive defect analysis

Client: ISI SYS, Germany

System Controls

Aug 2000 – Jun 2002

Engineer — Defence, R&D & Aerospace

Integrated system solution provider for Defence, R&D, and Aerospace sectors.

1. Control Stick Test Bench — HAL LCA Tejas

- PC104-based test bench with touch screen interface for HAL's Light Combat Aircraft (LCA) Tejas control stick qualification
- LVDT/RVDT data acquisition for force and displacement measurement

Tech: PC104, Touch Screen, LVDT/RVDT Data Acquisition | **Client:** HAL

2. Tachogenerator Test Bench

- 8031-based closed-loop motor controller using LM629 precision motion control IC

Tech: 8031 MCU, LM629 Motor Controller | **Client:** Southern Electronics

3. Portable Data Acquisition System

- Multi-sensor portable DAQ supporting strain gauges, thermocouples, and RTDs

Client: NAL (National Aerospace Laboratories)

4. Multi-channel Filter

- Low-pass, band-reject, and cascaded anti-aliasing filter modules for signal conditioning

Client: ADA (Aeronautical Development Agency)

5. Servo Valve Simulation Module

- Hydraulic servo valve simulation module for the Kaveri jet engine development program

Client: GTRE (Gas Turbine Research Establishment) — Kaveri Engine Program

6. AOA Vane Calibrator

- Angle of Attack vane calibration system for aerospace applications

7. DC Servo Motor Drive & Stepper Motor Drive

- Motor drive electronics for precision motion control in test and measurement applications

KEY SKILLS

Technology: Test & Instrumentation, Signal Conditioning & Data Acquisition, Power Electronics (DC-DC, LED Drivers, Solar UPS), Sensors, 16/32-bit Microcontrollers, Data Acquisition Systems, Radar (mmWave)

Architecture: Analog/Digital/Mixed Signal Circuit Design, Signal Integrity, EMI/EMC Compliance (IEC, EN, ANSI), Hardware Design, PCB Layout, Embedded Design, Firmware Development, Consumer/Industrial/Medical Device Development

Testing: EMI/EMC Testing, DFMEA, System Test Procedures, Quality Test Plans, LabVIEW Automated Test Software

Mechatronics: Control Automation, Motion Control (DC Servo, Stepper, BLDC)

Firmware: mbedOS, mbed, Keil ARM, Simplicity Studio, CooCox, GCC ARM, Arduino Studio

Tools: OrCAD Capture, Cadence Allegro, LabVIEW, Simplicity Studio

Management: Product Lifecycle, Project Management, Vendor Development, Certification (VDE, UL, FDA, FCC), Cost Estimation

DOMAIN EXPERTISE

Industry	Projects / Products
HealthTech / Senior Care	KuboCare radar-based ambient AI health monitoring for senior living
Medical Devices	CPAP Machine, Stempeutron (SVF Cell Isolation), Colposcopy Illumination Ring
Defence & Aerospace	HAL LCA Tejas Control Stick Test Bench, GTRE Kaveri Engine Servo Valve Simulation, ADA Multi-channel Filters, NAL Portable Data Acquisition
Test & Measurement	SCAD Product Series (500, 500L, 508, 100, 200, Cal), Shearography Phase Shifter
IoT / Wearables	Thunderboard Wear (ARM mbed Reference Design), Package Shock Logger
Vehicle Telematics	iTriangle Infotech telematics hardware architecture
Food Robotics	Freshot Robotics Idli ATM — fully automated cooking & vending robot
Industrial Automation	PLC for cement plant, Modbus GSM Module, Lab Digitization (LabVIEW)
Semiconductor	Tenxer Technologies IC Evaluation Platforms (Blaze, LiveBench)
EV / Automotive	Amberroot Systems — EV motor drive, motor test jig, CAN IoT logger, CE/RE compliance
Solenoid / Industrial Testing	I-Max — Solenoid coil testing automation
Connected Lighting / HCL	SupraEnergy Lighting — Human Centric Lighting (Circadian tuning), burn-in test automation, goniophotometry
Smart Storage	UWB RTLS Smart Shelf for chemical testing laboratory

EDUCATION

Bachelor of Engineering — Instrumentation & Electronics Engineering
RV College of Engineering, Bangalore University (1995–1999)

AWARDS & RECOGNITION

Technology Award for Successful Indigenization — Technology Development Board, Department of Science & Technology, Government of India (2013) for **SCAD 508** 8-Channel Expandable Strain Measurement System — Rs. 5 Lakhs cash prize + Trophy

International Exhibition Recognition — SCAD 500 exhibited at measurement system exhibition in Germany — the only Indian system showcased alongside global manufacturers; won significant international appreciation

NOTABLE CLIENTS & INSTITUTIONS

Government & Defence: BHEL, BARC, HAL (LCA Tejas), NAL (National Aerospace Laboratories), ADA (Aeronautical Development Agency), GTRE (Gas Turbine Research Establishment — Kaveri Engine Program)

Research & Academia: National Metallurgical Laboratory (Jamshedpur), Jadavpur University

International: ISI SYS, Germany

Industry: Southern Electronics, Stempeutics Research (Manipal Group / Cipla), Kubo Care, Freshot Robotics, Tenxer Technologies, SupraEnergy Lighting, Amberroot Systems, I-Max