THAKUR PAUDEL

E&E Domain Lead — Embedded Systems Architect

Battery Systems • Powertrain • System Architecture • IoT

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PROFILE

E&E Domain Lead with 6+ years R&D electric vehicles (100+ units deployed). Full-stack expertise in battery systems, powertrain control, automotive firmware (MISRA C++, ISO 26262) and hardware design (EMI&EMC compliance). Led cross-functional teams through 3 product launches.

EDUCATION

B.E. Electrical Engineering
I.O.E Pulchowk Campus Nov 2015 – Nov 2019

CORE COMPETENCIES

Safety Standards: ISO 26262 (ASIL-B), MISRA C/C++, AIS 156, ISO 15765-2 (UDS)
Embedded Software: C/C++ (500K+ LOC), FreeRTOS, Zephyr, Python
Protocols: CAN/CAN-FD, ISO-TP, UDS, OBD-II, BLE, MQTT, APB, AHB
Hardware Design: PCB (KiCad/Altium), power supply, signal integrity, oscilloscope
Digital Design: Verilog/VHDL basics, FPGA (Xilinx/Altera), timing analysis

TECHNICAL SKILLS

Languages: C, C++, Python, JavaScript, Verilog (beginner)
RTOS: FreeRTOS, Zephyr, Linux
Hardware: STM32, nRF52, ESP32, FPGA (Xilinx Artix-7)
Tools: Git, GDB, Oscilloscope, Logic Analyzer, Altium, Vivado (basic)

ACHIEVEMENTS

Person of the Year 2022
Yatri Design Studio
Most Significant Contribution 2021
Yatri Design Studio

LANGUAGES

English (Fluent)
Nepali (Native)
Hindi (Conversational)

EXPERIENCE

E&E Domain Lead May 2024 – Present
Yatri Design Studio

- Led teams architecting urban scooter platform (embedded, hardware, test)
- Migrated **100K+ LOC** FreeRTOS to Zephyr → **85% code reuse**
- Implemented **MISRA C++** → reduced bugs **2.1 to 0.6 per KLOC**
- Standardized **5 ECUs** with ISO 15765-2 (UDS) → **10ms** diagnostics
- Achieved **AIS certification** → unlocked India market
- In-house **HIL** development → reduced deployment errors 40%
- Designed hardware for motor controller with power stage optimization
- Mentored **3 engineers** promoted to senior roles

Lead Embedded Systems Engineer May 2022 – Apr 2024
Yatri Design Studio

- Architected VCU from scratch → replaced **$300** unit with **$87** in-house
- Developed **180K LOC C++** managing motor, battery, charging, ADAS, diagnostics
- Achieved **10ms control loop** with **99.2% uptime** (100 units, 18 months)
- Designed comm board (nRF52+ESP32): schematic, layout, bring-up, validation
- Deployed Nepal's **first fast-charging network** (15 stations, 3.3-7kW)
- Managed USAID charging (12 stations, 22-120kW) OCPP-compliant
- Maintained **70% code reuse** across 3 product tiers
- Explored FPGA sensor fusion prototype for real-time ADAS processing

Lead Powertrain Engineer Jun 2020 – Apr 2022
Yatri Design Studio

- Designed **32kW powertrain** → **0-60km/h in 2.5s** via PID tuning
- Built VCU (PCB + firmware) → eliminated **$600/unit** external controller
- Hardware validation: temperature (-20°C to 85°C), vibration testing
- Engineered **7.2kWh fast-charging** → **2hr charge, 90%+ efficiency**
- Debugged CAN bus signal integrity using oscilloscope

Battery Systems Engineer Dec 2019 – May 2020
Yatri Design Studio

- Designed **1.9kWh & 5.7kWh NMC packs** concept to production
- Reduced startup failures **80%** via BMS optimization
- Improved SOC/SOH accuracy **15-20%** via calibration

Freelance Embedded Systems Engineer (Remote) 2017 – 2019
International Clients (Canada, USA, China)

- **Driver Monitoring System (USA):** Developed AVR bootloader with OTA, camera streaming, and radar/sonar sensor fusion for driver state detection and collision avoidance (1 year)
- **Human Activity Recognition (Canada):** Built firmware for wearable device processing IMU data, detecting motion states (walking, sitting, falling), triggering alerts via BLE (6 months)
- **Railroad Model Controller (USA):** Designed PCB and firmware for 4-motor traction control system with CAN-based station communication (6 months)
- **Power Distribution Board (China-Canada):** Designed intelligent PSU board with multi-source management, BLE control, SOC monitoring, and LED/camera control firmware (8 months)

KEY PROJECTS

- **Project Zero:** 32kW cafe racer, 0-60km/h 2.5s, 230km range (50 units)
- **Project One:** 14kW dual-sport, off-road, wireless OTA
- **Project Two:** Urban scooter (2025), keyless, BLE/WebSocket, cloud
- **Charging Infrastructure:** 27+ stations (3.3-120kW), OCPP CMS
- **AI Project:** ML battery health prediction (Python/TensorFlow)