#### **Bhura**

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**PROFESSIONAL SUMMARY**

Embedded Systems Engineer with 8+ years of expertise in **real-time firmware**, **IoT protocols**, **secure bootloaders**, and **embedded utility tool development**. Proficient in **STM32, Renesas RA, PIC32**, with deep experience in **Zephyr, FreeRTOS, BLE, LoRa, MQTT, and secure OTA systems**.

Developed cross-platform tools in **Qt C++**, **Visual Studio C#**, and **OpenSSL** for testing, automation, and provisioning. Adept at complete product life-cycle development with MISRA C and OWASP IoT compliance.

**CORE SKILLS**

* **Languages:** C, Embedded C, C++, PHP, Python, Shell, C#, Javascript, Jquery, Shell Scripting, Assembly (x86, PIC, 8051)
* **Microcontrollers:** ATmega, Arduino, ATSAM, ARM LPC2124/2148, Microchip PIC8/PIC24/PIC32, Renesas RA4/RA6/RA8, RL78, Realtek RTD2660/RTD2662, STM32, STM8, TI MSP430, Nuvoton MS51Fxx, Linkedsemi LE50xx
* **Communication Protocol:** UART, SPI, I2C, CAN, RS485, DALI, RC5, HDLC, Bluetooth, WIFI, GATT, GAPP, GSM, GPS, AGPS, Zigbee, LORA, Modbus, Ethernet, MQTT/S, HTTP/S, Sockets, TCP/IP, FTP, SNMP,
* **RTOS and Frameworks:** Zephyr RTOS, FreeRTOS, Multithreading, Memory Management, Queue, Shempohre, Event Groups
* **Security & Compliance:** AES-256, TLS 1.2, X.509 certs, OTA with rollback, MISRA-C, OWASP IoT, Cppcheck, Parasof
* **Toolchains/IDEs:** Atmel STUDIO, Arduino IDE, CLion, CCSTUDIO, Keil, E2 STUDIO, MPLAB X, STM32CubeIDE, STM32CubeMX, Visual Studio Code, Altium
* **Development Tools:** Visual Studio, Qt, OpenSSL, Git, Github, Bitbucket, JIRA, CMake, SSH, Putty, Proteus
* **Cloud & Server:** Oracle Cloud, Linux (Ubuntu/Debian), Nginx, Apache, MySQL, MongoDB, Mosquitto, RabbitMQ, OneM2M
* **Web Technologies:** Laravel, Livewire, Node.js, REST API, MQTT over TLS, oneM2M R

**PROFESSIONAL EXPERIENCE**

**A PAUL Software Pvt Ltd, Okhla***Senior Embedded Engineer – Team Lead – System Architect*Jun 2017 – Present

#### **Team Lead & Embedded System Architect *(March 2023 – Present)***

* Architected multi-core firmware stacks for STM32, PIC32MX, and RA series platforms
* Led design reviews, code audits, and stakeholder alignment for ATEX and safety-compliant systems
* Designed modular layers for secure bootloaders, RTOS task architecture, and secure OTA

#### **Team Lead & Sr. Embedded Developer *(March 2022 – March 2023)***

* Delivered firmware for secure IoT gateways with BLE 5, GNSS, LTE, and OTA
* Integrated AES256-based OTA with rollback and secure provisioning (X.509 certificates)
* Developed automated provisioning and flashing tools in C#

#### **Assistant Team Lead – Embedded Systems *(March 2021 – March 2022)***

* Oversaw delivery of GSM/GNSS and LoRa sensor-based platforms for railway coaches
* Developed NMEA GPS parsers and virtual paging systems with memory-optimized logging and supported in certification, documentation and technical audit reviews.

#### **Senior Embedded Developer *(March 2018 – March 2021)***

* Created middleware for BLE, LoRa, AGPS, and GSM over FreeRTOS and bare-metal
* Ported firmware across STM32, RA, and PIC families with HAL driver abstraction
* Implemented CI/CD pipeline using Git and automated static analysis (Cppcheck)

#### **Embedded Firmware Engineer *(Sep 2017 – March 2018)***

* Built drivers for UART, I2C, TFT GUI, EEPROM logs, and bootloaders
* Integrated TFT display menus, keypads, EEPROM logging, and basic GUI
* Debugged systems with logic analyzers, SWD, ITM, JTAG, and real-time loggers

**SCUBE (Satyam Software Solution), Noida***Embedded Developer*Jan 2016 – Sep 2017

* Developed coin dispenser system (Delhi Metro)
* IP Display Unit using RTD2660 graphics controller

**Sofcon Group, Noida***Embedded System Engineer*2016 – Present

* Designed and implemented firmware for fire extinguisher control panels, Milk stirrers machine
* Wrote complete firmware for an IoT Dot matrix display using GSM and HTTPS Rest API

**TOOL DEVELOPMENT PROJECTS**

* **Secure Config Provisioner:** GUI/CLI using C# and OpenSSL for X.509 certs and config binaries
* **GPS Route Editor:**  GUI utility for generating time-stamped GPS tracks for FogSafe
* **USB/UART Test Tool:** PC-based tool for automated interface and hardware validation
* **Bootloader Flash Tool:**  Firmware upgrade tool with rollback and validation logic
* **Web Apps:** Device Registration, OTA command panel, Secure OTA firmware upgrade

**KEY PROJECTS**

* **OBCMS Sensor(WIP):**
  + **Traction Motor Vibration Sensor:** POE, Motor health and monitoring
  + **Wheel Sensor Wireless:** . Low-power, sensor-rich BLE/Wi-Fi coach monitoring device, bearing and wheel monitoring
  + **Latch Detection System:** Wagons latch detection system, Battery based, Low-power, Solar charging, hybrid device
* **16-PORT Ethernet Switch :** PoE switch for railway sensor networks with web configuration
* **Water Level Alert System:** GSM-based level notifier with MQTT & REST API integration
* **Wagon Tracker:** Hybrid BLE 5.3 + GSM/GNSS tracker with 6+ sensors and secure OTA
* **FogSafe:** RTOS-based landmark pre-warning for loco pilots with route auto-sync
* **ETU-Emergency Talk Back System:** Real-time RTOS/Non-RTOS intercom with noise filtering
* **TASSI-Toilet Annunciation Sensor System**: Bare-metal system for sensors + announcements

**Education**

B.Tech in Electronics and communication Engineering

Uttar Pradesh Technical University - 2011 to 2015

**Certifications & Courses**

* ***EmbeddedExpert.IO, Online***
  + Embedded Systems STM32 HAL APIs Driver Development
  + Advanced Embedded Systems Bare-Metal Programming Ground Up™
  + ARM GNU Assembly Programming From Ground Up™
* **Sofcon Training Institute, Delhi**
  + Embedded Systems and Micrcocontrollers (6-Month)
  + Linux and Driver Development (3-Month)
  + Basic Electronic and Hardware Design(3-Month)

**ACHIEVEMENTS**

* Successfully delivered 3+ industrial projects including a ₹1000 Cr POC
* Developed and deployed cloud infrastructure using Linux, RabbitMQ, OneM2M
* Created 5+ in-house embedded utilities for production and testing automation

**PERSONAL DETAILS**

**DOB**: 17-Dec-1994  
**Nationality**: Indian  
**Languages**: Hindi, English