Anurag Tiwari

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Summary

Principle-level Embedded Software Engineer (10+ yrs) specializing in **Yocto BSPs**, **Xilinx Zynq (PS)**, **Embedded Linux**, and **device drivers** (incl. **MIPI CSI-2** camera). Built and containerized **Cloud RAN** apps (Docker/Kubernetes), automated validation (**Robot Framework**, Jenkins), and delivered production-grade firmware/services with strong DT&E discipline. Recent work at **CommScope** spans RAN managers (DM/AM/PFM), microservices (gRPC), and Kafka-backed logging—**improving test coverage and release velocity**.

Skills

Low-Level & Drivers: Linux device drivers, MIPI CSI-2 camera pipeline, V4L2, I2C/SPI/UART, DMA, IRQs, GPIO, pinmux
Kernel & BSP/Yocto: Yocto (distro layers, recipes, images), U-Boot, initramfs, systemd, kernel config/patches
Board Bring-Up & Debug: Xilinx Zynq(PS), boot flow, DDR, clocks, PMIC, JTAG, logic analyzer, oscilloscope
RAN & Cloud-Native: C/C++, gRPC, Kafka, Docker, Kubernetes, microservices, CI/CD, observability
Tooling & Automation: Robot Framework, Jenkins, Git, JIRA, DOORS, Enterprise Architect
Languages: C, C++, Embedded C, Python, Shell; Web (React, Node.js) where relevant

Experience

Research & Development Engineer II Jan 2022 – Present
CommScope, Bengaluru

- Owned Yocto BSP and image customization for Cloud RAN appliances; streamlined layer hygiene and CI, reducing image build time by **22%** and field rollouts by **∼1 day/release**.
- Implemented PS-side drivers and user-space control paths (I2C/SPI, DMA, IRQ) for radio subsystems; cut bring-up defects by **30%**.
- Developed MIPI CSI-2 camera capture path on Embedded Linux (V4L2, media graph, sensor init, lane config); stabilized streaming with **0 dropped frames** in 30-min soak.
- Containerized RAN managers (DM/AM/PFM) with **gRPC** interfaces; deployed on **Kubernetes**; integrated **Kafka** log streaming and probes for SLOs.
- Established Robot Framework + Jenkins test automation across multi-node rigs, increasing regression coverage from **∼45%** to **>80%**.

Software Engineer Nov 2018 – Jan 2022
Capgemini, Gurgaon

- Developed automotive embedded software using **AUTOSAR** architecture for instrument clusters; implemented telltale and door warning applications with Embedded C and Vector tools (CANalyzer, CANoe, DaVinci).
- Executed comprehensive testing strategy spanning Unit, Functional, Integration, and System levels; enhanced software reliability and compliance with automotive standards.
- Designed Smart-Grid Network Interface Card applications featuring **Over-The-Air (OTA)** updates and commissioning processes; improved field deployment efficiency by **25%**.
- Maintained code quality and documentation using JIRA, DOORS, and Enterprise Architect; established coding standards that reduced integration defects by **40%**.

IoT Support Engineer Jan 2018 – Aug 2018
BuffaloGrid Project Pvt Ltd, Delhi

- Developed firmware for distributed solar-powered mobile charging hubs; implemented **FOTA updates** and Battery Management System (BMS) software for field-deployed units.

- Created test automation scripts reducing manual QA effort by **40%**; enhanced product testing reliability and deployment validation.

Embedded Software Engineer Dec 2015 – Dec 2017

Eigen Technologies Pvt Ltd, Delhi

- Led electronic design and firmware development for WSN-based smart streetlight and BLE-based home automation products; delivered end-to-end IoT solutions.
- Implemented multi-protocol firmware supporting 802.15.4 protocols including Zigbee; conducted comprehensive QA testing ensuring compatibility across devices.
- Architected and deployed IoT dashboard on AWS with real-time data visualization; integrated with 4G module gateway using AT commands for remote monitoring.

Selected Low-Level Systems Projects

Yocto BSP for Custom Zynq Board — Distro layers, U-Boot patches, kernel config, image recipes; reduced boot time via systemd unit profiling and init sequence trimming.
MIPI CSI-2 Camera Driver & Pipeline — Sensor init (I2C), CSI lane timing, V4L2 sub-dev, media controller graph; validated with long-run soak, artifact-free frames.
PS-Side DMA/Interrupt Path — Engineered robust DMA ring buffers and IRQ service; back-pressure handling to maintain deterministic throughput.
RAN Microservices on K8s — gRPC services (DM/AM/PFM), Kafka log bus, readiness/liveness probes; Helm deploys and blue/green updates.
HW Bring-Up & Debug — Pinmux, clock tree, PMIC init; boundary scan + JTAG; logic analyzer traces for ISR latency verification.

Education

B.Tech in Electrical & Electronics, GGSIPU (2014), Score 70.5%

Updated on: September 25, 2025