Shraddhaben Rakholiya

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WORK EXPERIENCE

Software Engineer | Picus Tech Software May 2018 – May 2023

Infotainment & CarPlay Development | C, C++, Linux, GStreamer, ALSA, TCP/IP, Bluetooth, Wi-Fi, MFi, iAP2

- Led the development of CarPlay Infotainment system on i.MX8 and custom SoCs using C, C++ and Linux, integrating voice control, real-time navigation, and wireless protocols (TCP/IP, Bluetooth, Wi-Fi) to deliver a seamless in-vehicle experience
- Implemented wireless support in the MFi-device interface library using C++ and low-level networking APIs, improving connectivity functionality by 20% and ensuring robust device communication
- Designed and optimized Audio/Video pipelines using GStreamer and ALSA, enabling low-latency media playback and synchronized multi-display infotainment across automotive systems
- Achieved ATS certification by implementing iAP2 over CarPlay Client, meeting stringent automotive compliance and validation standards
- Mentored and trained 2 junior engineers, helping to develop a high-performing and knowledgeable team

Embedded & Graphics Development | C, C++, Linux, Yocto, RTOS, IAR, OpenVG, Open GLES, Vulkan

- Customized Linux kernel images, modules, and device tree blobs (DTBs), and tailored Yocto-based builds (Bitbake, OpenEmbedded) to optimize boot processes and hardware compatibility across NXP i.MX6/7/8, i.MXRT, and custom SoCs
- Tuned bootloader configurations and integrated kernel patches to ensure reliable system initialization and enhanced runtime performance for embedded automotive platforms
- Designed and implemented a GPU 2D test suite with 150K+ test cases in C and Python to support the driver porting from Embedded Linux to FreeRTOS, reducing driver defects by 30% and speeding up validation cycles by 40% on custom SoCs
- Optimized static SVG rendering on 2MB memory-constrained embedded systems using OpenVG and VGLite, increasing rendering accuracy from 8% to 89% through element integration and memory tuning
- Resolved critical software bugs using GDB, Valgrind, IAR, and custom test frameworks, ensuring embedded system reliability and compliance with quality standards

INTERNSHIP

Software Engineer Intern | Stealth Startup | Spring Boot, REST APIs, Java, Postman, GCP, Flutter May 2024 – Dec 2024

- Developed and deployed REST APIs using Spring Boot and Java, integrating with GCP with minimal downtime
- Streamlined API testing with Postman, resolving critical bugs and decreasing response time by 5%
- Automated CI/CD workflows using GitLab, Docker, and Kubernetes; integrated Firebase for seamless cloud deployment, boosting release frequency to 4x/week
- Collaborated with stakeholders to address system integration challenges, ensuring seamless data flow and interoperability

SKILLS

Languages: C, C++, Python, Shell Scripting, Make, CMake

Embedded Systems Expertise: Linux Kernel, Bootloader Customization (U-Boot), Device Tree Configuration (DTB), Firmware Development, GPIO, UART, SPI, I2C, ARM Cortex, Memory Profiling

Frameworks & Tools: Yocto, Buildroot, IAR, GDB, Valgrind, Git, JIRA, MISRA C, RTOS, SDK, BSP

Processors: NXP i.MX6/7/8, i.MX RT series, Custom SoCs

Expertise: Kernel Debugging, Process Automation, Hardware/Software Integration, Real-Time Systems, Performance Tuning, Test Automation, Interface Development, Low-level debugging

EDUCATION

Illinois Institute of Technology, Chicago, United States of America Expected May 2025

Master of Science in Computer Science

Courses: Data Structures and Algorithms, Advanced Database Organization, Machine Learning, Computer Networks, Software Quality Management, Mobile Application Development

National Institute of Technology, Surat, India 2014 – 2018

Bachelor of Technology in Electronics and Communication Engineering

Courses: Embedded Systems, Microprocessor, Digital Logic Design

PROJECTS

Database Management System Components | C, Linux

- Engineered a modular Database Management System in C, implementing storage, buffer, record, and B+ tree index managers; enhanced data retrieval efficiency through optimized I/O, memory management, and advanced page replacement strategies (FIFO, LRU, LFU)

Architectural Heritage Elements Image Classification | Python, Pytorch, CNN, Jupyter Notebook

- Developed a CNN-based image classification model for architectural heritage elements, achieving 85% accuracy on a dataset of 10,235 images; optimized training pipeline using k-fold cross-validation and augmentation to enhance model robustness

Mobile Applications | Dart, Flutter, MVC, REST APIs

- Architected 5 cross-platform mobile apps using Flutter and RESTful APIs, applying MVC architecture to ensure clean code separation, scalability, and high performance across diverse user experiences