

Swapnil Uttam Gajbhiye

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Embedded Software Engineer | C Programming | Microcontrollers | CAN | RTOS

Objective:

Detail-oriented and passionate Embedded Software Engineer with hands-on experience in C/C++, microcontroller programming, integration testing, and Python automation. Seeking to contribute to innovative embedded system development by leveraging skills in firmware design, real-time systems, and hardware-software integration. Committed to delivering reliable, efficient, and maintainable solutions while continuously learning and growing in a dynamic engineering environment.

Technical Skills:

- **Programming Languages:** C & C++
- **Operating Systems:** Windows and Linux
- **Software and Tools:** Vim Editor, VS Code, Arduino, Eclipse, GIT, Perforce, debuggers, IDEs, build systems
- **Embedded Systems:** Microcontrollers, ARM architecture, real-time operating systems, MIPI-CSI-2, PHY specifications
- **Embedded Linux:** Kernel modules, device drivers, system debugging, V4L2 framework
- **IoT Technologies:** Knowledgeable in IoT trends and protocols (e.g., MQTT, CoAP)
- **RTOS:** Real-time operating systems (Android, QNX, Embedded Linux)
- **Drivers:** CAN, EEPROM, I/O, UART, camera sensors, CVBS, analog cameras
- **Testing:** Integration Testing, Unit Testing

Experience:

Knorr-Bremse Technology Center India (KBTCI)

Apr 2024 to Present

Embedded Software Engineer

- Engineered and validated firmware for **microcontrollers** (e.g., MSP, AURIX), upgrading to on-chip **CAN** communication for the **ESRA** project and implementing **UART** from initialization to application in the same project.
- Developed low-level drivers for **CAN, UART/RS232, I/O, EEPROM**, and Monitor services in ESRA project.
- Integrated and optimized communication protocols (e.g., **UART, CAN**), enhancing system interoperability and performance.
- Managed system start and states, including self-test, initialization of CPU, firmware, library, and base software services.
- Created **3 Python-based applications** to automate documentation workflows, parse and log test data, and fetch version control (SVN) data.
- Used compiler toolchains and **MakeFiles** for code **compilation and linking**.
- Conducted module-level testing and contributed to complete software **documentation**.
- Handled **customer-reported issues** related to the CBK-ESRA project, including root cause analysis and resolution.
- Performed **Integration testing** and **Unit Testing** of embedded software modules for railway braking systems.
- Developed a command-based test environment for executing and automating test cases.

Collabera Inc.

Dec-2020 to Jan-2022

Technical Recruiter

- Managed end-to-end recruitment cycles, from requirement gathering to final onboarding.
- Specialized in sourcing and placing candidates in Telecommunications and Financial domains.
- Applied advanced internet sourcing techniques to identify and engage top talent.
- Demonstrated effective negotiation skills to align candidate and client expectations.

Note: Transitioned from recruitment to core embedded development after completing technical upskilling.

Education:

- CDAC in DESD, Sunbeam Institute of Information Technology Pune, 2023 - 71%
- B.E. in E&TC, St. Vincent Pallotti College of Engineering & Technology Nagpur, 2016 - 2020 -72.1%
- HSC, Kendriya Vidyalaya Kamptee, 2015 - 2016 - 58.6%
- SSC, Kendriya Vidyalaya Kamptee, 2013 - 2014 - 70.1%

Projects:

- **Command-Based Testing Framework:** Developed a CLI environment to automate CAN-based test executions and logging.
- **Rail Braking System Integration:** Worked on embedded systems for rail braking applications, focusing on safety-critical signal processing and system diagnostics.
- **Low-Level Driver Development:** Developed and tested drivers for EEPROM, digital/analog I/O, CAN communication, and Analog Devices Inc. (ADI) components, ensuring robust hardware interfacing.
- **Python Automation Tools:** Built applications for test data parsing, SVN log extraction, and report generation.
- **Realtime Vehicle Monitoring (IoT Project):** Logged vehicle data using sensors and communication protocols for safety insights.
- **Incremental Encoder Tester:** Designed a portable solution to test encoder feedback signals in industrial environments.

Achievements & Activities:

- Successfully organized and hosted a Company's meetup event.
- Student's Chairman in the IETE forum of the Electronics and Telecommunications Dept.
- Coordinated a Workshop on Aptitude Development.
- Conducted a Workshop on NodeMCU (esp8266) for polytechnic students.

Personal Strengths:

- Analytical & Critical Thinking
- Problem-Solving Mindset
- Effective Time & Task Management
- Strong Communication & Leadership
- Adaptable & Collaborative

Personal Details:

- Marital Status: Single
- Date of Birth: 12 Sept 1998
- Languages: English, Hindi, Marathi
- Hobbies: Singing, Dancing, Rap, Acting, Snooker, Travelling