Gaurav Agarwal

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"Dream big, start small. But most of all, start."

Summary

I have 7+ years of experience spanning all phases of the software development lifecycle, with a proven track record of delivering results in diverse environments which includes cutting-edge aerospace R&D labs, agile startups, and large-scale enterprises. What drives me is to deepen my expertise, embrace state-of-the-art technologies, and contribute to forward-thinking organizations by developing technology-agnostic, innovative solutions in challenging and dynamic domains.

Education

P.E.S Institute of Technology, Autonomous Institute under VTU, Belgaum — *Bengaluru, India*

B.E in Electrical and Electronics Engineering — *Aug.'13 - May'17*

- GPA: 8.93/10.00
- Major Courses: Embedded System, Control Systems, Digital Signal Processing

Kerala Samajam Model School (KSMS) — *Jamshedpur, India*

I.C.S.E, I.S.C in Pure Science with Computer Application — *Mar'99 - May'13*

- ICSE: 93.4%, ISC: 88.75%

Technical Skills

Programming Languages	C, C++, Python, Bash, Go, Java, SQL, Matlab & Simulink, LaTeX
Embedded Development	Linux (Yocto, Buildroot), RTOS (DEOS, VxWorks, FreeRTOS), Device Drivers, BSP
DevOps & Tools	Git, GitLab CI/CD, Jenkins, Docker, Kubernetes, Doxygen, CVE, Polyspace, Postman
Processor Architectures	ARM (Cortex-M, Cortex-A), SPARC, AVR, RISC-V, and Zynq (PS-PL Integration)
Communication Protocols	UART, SPI, I2C, CAN, ARINC, ADC, HTTP/HTTPS, REST APIs, WebSockets, TCP/IP, MQTT, FTP
Full-Stack Development	REST API Development, PostgreSQL, React.js, Angular, Authentication (OAuth, JWT)
Operating Systems	RTOS (DEOS, VxWorks, FreeRTOS), Linux (Ubuntu, CentOS, Yocto, Buildroot), Windows
Cloud & Networking	AWS (EC2, S3, Lambda), Azure, Nginx, Docker Swarm, Load Balancers, Reverse Proxies

Work Experience

Boeing India Pvt. Ltd. *Bengaluru, India*

Software Engineer 2 | Embedded & Avionics Systems *Nov'19 - Present*

- Designed, developed, and maintained architectures, requirements, algorithms, interfaces, and designs for **avionics** software systems across diverse product lines. Conducted feasibility studies, created robust architectures, and collaborated with cross-functional teams to ensure alignment with regulatory standards.
- Led the design and development of software modules for embedded avionics systems, focusing on the integration of hardware components and ensuring seamless interaction between software and specialized hardware. Performed rigorous software testing, debugging, and validation to ensure adherence to safety, performance, and regulatory standards.
- Architected and integrated software components into fully functional systems leveraging **RTOS** or **Linux**-based platforms, utilizing a variety of programming languages and technologies. Conducted in-depth requirements analysis, architectural design, and peer reviews, ensuring full traceability and the delivery of maintainable, high-quality software solutions.
- Developed and maintained build infrastructure, platform services, middleware frameworks, real-time communication protocols, diagnostic tools, and mission-critical application software for **avionics** systems, ensuring high scalability, performance optimization, fault tolerance, secure data handling, and seamless integration across flight and hardware-in-the-loop simulation environments
- Guided the adoption of emerging technologies, frameworks, and regulatory updates into the development lifecycle. Conducted technical reviews, evaluated new tools and technologies, and provided recommendations for integrating advanced solutions into existing avionics systems to ensure compliance with evolving industry standards and customer needs.
- Configured custom hardware architectures and optimized Board Support Packages, including U-Boot, kernel, custom **Yocto** recipe-based root file systems, cross-compilation toolchains, and device trees, to enable efficient secure boot processes and enhance runtime performance for custom hardware platforms.
- Designed and implemented automated CI/CD pipelines with GitLab CI and Docker, streamlining build, integration, and deployment processes to ensure consistent and reliable software releases.

Team Indus (Axiom Research Labs Pvt. Ltd.) *Bengaluru, India*

Flight Software Engineer | Integrated Avionics | Command & Data Handling | Guidance, Navigation & Control *Jul.'17 - Present, **Intern**: Jan.'17 - Jun.'17*

- Developing software systems for **orbital**, **descent** and **surface** phases of the soft landing lunar mission, with onboard state estimation, autonomous attitude correction, lunar terrain feature tracking, active thermal and power control, interface drivers for sensors peripherals and other interfacing cards, with limited fault detection, isolation, and recovery.
- Writing, analyzing, and maintenance of software requirements for Lander **On-Board Computer(L-OBC)**, **Auxillary Flight Computer (L-AFC)** and Rover **On-Board Computer(R-OBC)**. Studying the feasibility with present architecture, providing solutions for each module development and final independent verification and validation.
- Design and testing of telecommand packet definition for the entire lunar landing mission: real-time, absolute time-tagged, patch, differential time-tagged, configurable block and event-based commands.
- Developing frameworks for running regression unit, interface and integration level of testing with auto code generation capabilities which involves sensor and other interface cards emulation using **Interface Emulation Card (IEC)**, board bring-ups for **Integrated Avionics Unit (IAU)**, and generate reports for each activity.
- Developed framework for **Processor in Loop Simulation (PiLS)** system emulating sensor and actuator electrical interfaces to IAU.

Awards and Accolades

Jan'16	**APCOSEC'16- Asia Oceania Systems Engineering Conference**, Published a paper titled "Design of a student satellite -PISAT"	*Bengaluru, India*
May'16	**Bronze Award in System Engineering Challenge organized by INCOSE**, Presented a Paper Titled "Telemetry and telecommand for PISAT"	*Bengaluru, India*
Mar'13	**State Rank 1**, International Olympiad of Science and Mathematics, Silver Zone	*Jamshedpur, India*