

GAHAN SARAIYA

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OBJECTIVE

Senior System Software & Firmware Engineer specializing in **UEFI firmware**, **EDK2**, **OpenBMC**, and platform enablement. 9+ years experience in firmware bring-up, **Open Source** contributions (**Mantis database**), **RAS** (Reliability, Availability, Serviceability), and **GPU firmware**. Experience with cluster telemetry (Prometheus, Grafana, Slurm), Agentic AI knowledge bases, and upstream-first development for high-performance server platforms.

SOFTWARE TOOLS

Languages	UEFI C, C++, Python, Shell, SQL, LaTeX, YAML
Firmware/BMC	UEFI, EDK2, OpenBMC, Yocto, PLDM, IPMI, Redfish, fwupd, Secure Boot, TPM
Platform	Systemd, device tree, bootloaders, kernel/driver debug, SoC bring-up
RAS	RAS for GPU firmware, Mantis Database, ROCm, SEL/CPER, telemetry
I/O	I2C/SMBus, SPI, UART, JTAG, Ethernet, CPLD/FPGA hooks
Build/CI	Yocto, CMake, Git, Jenkins, GitHub Actions, Docker/OCI, Terraform, GenAI/Agentic Tools
Observability	Prometheus, Grafana, Slurm, Telemetry, Log Shipping to S3, Observability Agents

EXPERIENCE

Senior System Software Designer at AMD India Pvt Ltd Mar 2024 - Present

- Drive **RAS for GPU firmware with use-case scenario injection** on **ROCm** for MI2XX/MI3XX SKUs; define reliability/availability criteria for data center SKUs.
- Architect in-band SMI tooling and telemetry (thermal/power/memory); formulate fault coverage and recovery behaviors for serviceability.
- Manage cluster observability with Prometheus, Grafana, and Slurm; auto-deploy observability runners/agents; ship validation logs to AWS S3.
- Design Obsidian-based agentic memory network for knowledge base and skills auto-sync supporting firmware and platform workflows.
- Partner with firmware and silicon teams on compute partitioning, SMI hooks, **HIP** profiling, and parallel execution models.
- Actively contribute to **Open Source** firmware ecosystem; track architecture defects, enhancements, and issues leveraging the **Mantis database**.

Senior Firmware Development Engineer at Intel Technology India Pvt Ltd Oct 2023 - Mar 2024

- Co-architected Universal Scalable Firmware (USF) orchestration layer; aligned **UEFI Firmware/BMC** configuration flows and lifecycle policies.
- Built provisioning pipelines for HPC boards: remote **BMC/BIOS** flashing, OS deploy, **EFI/OS** boot automation via **Redfish** and **Jenkins**.
- Tuned **boot-time performance**; hardened firmware delivery with staged deploy and artifact signing for notebook platforms.

Firmware Development Engineer at Intel Technology India Pvt Ltd Jun 2020 - Sept 2023

- Led **UEFI firmware** automation and SDLC compliance: security gates, static analysis, and code quality for the **EDK2** ecosystem.
- Built and maintained full-scale **firmware** functional validation workflows; owned GitHub review hooks, Jenkins CI, and **Open Source** compliance tools.

Firmware Engineer Intern at Intel Technology India Pvt Ltd Jun 2019 - May 2020

- BIOS/UEFI (EDK2) development for client platforms; evaluated hardware debugging solutions and **Open-Board** package integration.

Teaching Assistantship at Nirma University Aug 2018 - May 2019

- Data Mining and Visualization

Software Developer at Quixom Technology Jul 2017 - Apr 2018

- SaaS-Employee management system (chat, surveys, benchmark, analytics...) and Restful API Development
- Socket programming in python to receive continuous data from IoT device and display chunks of data meaningfully
- Streaming service with Web-Portal, DRF and Kodi across platforms

Freelance Full-stack Developer 2015 - Apr 2019

- Cloud solution for Data gathering and webscraping with selenium and GCP.
- Designing template and banners for High resolution prints
- Inventory management system for Book store with Django.

PROJECTS

Cluster Management and Observability 2025 - Present

Description: Cluster management and observability for large-scale GPU networks.

- Integrate Prometheus, Grafana, and Slurm telemetry; auto-deploy observability runners and agents; automate log upload to AWS S3.

Obsidian Agentic Memory Network 2025 - Present

Description: Agentic memory index, knowledge base, and skills auto-sync for human- and agent-readable firmware/platform knowledge.

- Deliver Obsidian-based agentic design for indexed knowledge and auto-synced skills.

RAS and Telemetry for GPU Firmware 2024 - Present

Description: In-band profiling and **RAS for GPU firmware with use-case scenario injection** on **ROCm** stack.

- Telemetry for thermal/power/utilization; dynamic workload orchestration from hardware metrics.
- Developed reproducible tests and mapped defects using the **Mantis database** to drive **Open Source** issue resolution.

Agentic AI for Software Engineering Modernization 2025 - Present

Description: Modernized software engineering, repository management, and code review processes for firmware workflows using Agentic AI and Generative AI (Claude, Cursor).

- Developed multi-tool compatible skills, agents, and custom git hooks to automate low-level code review and compliance.
- Implemented security compliance enforcement and precise API token spend restriction mechanisms.

Context-Aware Defect Triage & Task Routing with LangGraph 2024 - Present

Description: Led a team and managed sprints to achieve automated, context-aware defect triage and issue disposal for complex firmware validation databases.

- Designed smart routing workflows via LLMs and semantic FAISS indexing to direct tickets to relevant firmware component experts.

- Integrated OpenAI, Vertex AI, and local LLMs with multi-source data connectors for GitHub, Jira, and historical test logs.
- Built a persona-based counselor model to summarize findings, adapt advisory content for developers, and generate actionable items post-quality matrix validation.

Prompt Engineering and Generative AI for firmware stack 2023 - 2024

Description: Accelerated **firmware** deliveries with LLM assistance.

- Task summarization via Azure OpenAI (GPT3.5/4); code review guidance vs static-check standards.
- Automated code enhancement suggestions for firmware teams.

Platform Provisioning with Pre-Production Reference Board 2023 - 2024

Description: Automated bring-up for pre-production server processors.

- Remote BMC/BIOS flashing and OS deployment from artifactory via Jenkins pipeline.
- EFI/OS boot automation and initial setup using Redfish API; reduced manual touch.

Universal Scalable Firmware 2022 - 2024

Description: Platform orchestration layer for **UEFI firmware** configuration.

- Motivation of workgroup - [Firmware Configuration – Past, Present, and Future](#)
- [Firmware Configuration](#)

Firmware Automation Framework 2020 - Present

Description: SDL-compliant automation for UEFI firmware at scale.

- Zero-touch BIOS configuration; security/legal/licensing/static-analysis gates.
- Continuous deployment and test with Jenkins/tox; artifact publish to JFrog via GitHub Actions.
- <https://github.com/intel/xml-cli>

EDUCATION

M.Tech Computer Science Nirma University, GPA: 8.49	Jul 2018 - Jun 2020
B.E. in Computer Science and Engineering CGPA: 8.08	Aug 2013 - Apr 2017 Gujarat Technological University,
12th Science, GSHSEB, Class XII Science Stream, 74.92%	Jun 2011 - Mar 2013

CERTIFICATIONS

2025	AMD ROCm Star - Application Developer by AMD Adaptive Computing Training Team
2025	On-Device AI by Qualcomm & DeepLearning.ai
2025	Essential Terraform in AWS
2021	Product Assurance and Security Yellow Belt - Software
2020	Natural Language Processing with Classification and Vector Spaces Coursera S9DGGMCDMBGQ
2020	Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization Coursera SMWQJKJYJW6G
2020	Structuring Machine Learning Projects - Coursera SEJML7H3TN5Z
2020	Neural Networks and Deep Learning - Coursera S2TETZHTLUSL
2020	Machine Learning - Coursera XVNXNPPZ3JMA

ACHIEVEMENTS

2026	Top 1% recognition for AI use-case development
2026	Top 10 in AI Hackathon: Hack2Skill Prompt Wars by Google (In-person, Bangalore)
2026	Rank #3 in Virtual Prompt Wars Hackathon
2023	Firmware Configuration Presentation at UEFI Developers Conference & Plugfest
2023	Tech Talk on Harnessing Multiprogramming across CPU, GPU and QPU (Quantum Processing Unit)
2021	Expert Lecture on CUDA Programming
2019-Present	4000+ reputation on Stackoverflow
2017-Present	Active volunteer on Peer Learning, Cultural and team building activity
2018	Rank #1 for Python challenges on hackerrank
2018	Rank #112 from 2 lacs+ participants in Techgig's National Coding Contest 2018

PUBLICATIONS

• HIP Parallel Programming with ROCm Lecture Series, YouTube	2025
• Beyond the Power — Data Center & BMC Lecture Series, YouTube	2025
• System Design for Parallel Programming Lecture Series, YouTube	2025
• Firmware Configuration – Past, Present, and Future . Presentation, UEFI DevCon 2023	2023