

# GAHAN SARAIYA

☎ +91 7359508173 ✉ [gahansaraiya@gmail.com](mailto:gahansaraiya@gmail.com) 💼 [linkedin.com/in/gahan-saraiya](https://www.linkedin.com/in/gahan-saraiya) 🐙 [github.com/gahan9](https://github.com/gahan9)

## OBJECTIVE

With over 7+ years of experience as a Senior Software Engineer, currently working at AMD India Pvt Ltd. for managing AI/ML workload execution on HPC device (GPU). I possess a strong command over Python, HPC, UEFI Firmware, and DevOps, complemented by a thorough understanding of their workflows and architectures. My enthusiasm for open-source contribution and knowledge dissemination reflects my commitment to being a philanthropist in the realm of technology. I am eager to channel my expertise into the architectural design of optimized quantum machine learning algorithms tailored for multi-programming environments, as well as to explore the synergies between these cutting-edge technologies and DevOps practices.

## SOFTWARE TOOLS

<b>Languages</b>	Python, Shell Scripting, SQL, LaTeX, YAML
<b>Frameworks</b>	Pytorch, Pytest, Edk2, PyCUDA, Pandas, UEFI, Selenium, Redfish
<b>Architecture Design</b>	Parallel Programming System Architecture, ROCm, HIP Programming
<b>Tools and Services</b>	GitHub Actions, Jenkins, Restful APIs, Teamcity, Terraform, Docker, Docker Compose, Jenkins, TeamCity, GiT
<b>Cloud Technologies</b>	AWS EC2, AWS S3, AWS Cloudwatch, VPC Networking, AWS Sage Maker, AWS Lambda, AWS Cloudfront, ECR, ECS, EKS, JFrog Artifactory GCP, Azure, Digital Ocean

## EXPERIENCE

<b>Senior System Software Designer at AMD India Pvt Ltd</b>	Mar 2024 - Present
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- Workload execution pool management for cross geo platforms for CI/CD on Jenkins
- Release management of ROCm builds for production, non-production and various other categories with matrix of configuration of OS and toolchain
- Docker orchestration on enterprise registry
- Platform provisioning migration with terraform
- Conducting functional and performance benchmarking of HPC devices (GPUs) by developing and executing comprehensive test suites aligned with industry standards.
- Develop Load balanced optimal GPU performance criteria with thermal limits, power consumption, memory usage, and core utilization.
- Incorporating state-of-the-art industry standards design models, implementing and utilizing frameworks like TensorFlow, PyTorch, and GEMM operations.
- Provided precise steps for RAS (Reliability, Availability, and Serviceability) injection on MI2XX and MI3XX platforms.
- Designed precise steps for range of firmware capabilities, including partitioning, System Management Interface (SMI), HIP profiling, and parallel execution.

<b>Senior Firmware Development Engineer at Intel Technology India Pvt Ltd</b>	Oct 2023 - Mar 2024
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- Platform provisioning and infrastructure setup for mass automation of HPC products.
- Platform Orchestration Layer design of Universal Scalable Firmware (USF).
- Harnessing Azure OpenAI Generative AI adaptation for Firmware Development Productivity for assessment code review, guidance, basic security checks of code.

- Terraform deployments for environment for on-the-go dev environment over kubernetes cluster. (including setting up a node platform from scratch)
- GitHub Action and JIRA integration for managing Continuous deployment and test through CloudBees Jenkins with baremetal and docker nodes.
- Enhancing firmware-based boot-time performance for notebook devices.

### **Firmware Development Engineer at Intel Technology India Pvt Ltd**

Jun 2020 - Sept 2023

- Lead the next generation client platform and architecture design at USF POL alongside the domain ownership for Automation Framework, Platform Provisioning, Applied Generative AI & Prompt Engineering and Quantum Firmware Design.
- The end-to-end Software Development Life Cycle is managed, which includes licensing, legals, and IP planning, as well as applicable Code Security and Static Code Analysis.
- Jenkins configuration for Security tools - Snyk, Coverity
- Improving github code review hooks for python packaging and linting through bandit and flask as Jeninks pipeline
- automated testing of firmware functional validation of Firmware with TeamCity.
- Mentoring and knowledge development engagement activities.

### **Firmware Engineer Intern at Intel Technology India Pvt Ltd**

Jun 2019 - May 2020

- BIOS Firmware Development for Client products with the framework EDK2, UEFI Firmware, Involvement with assessing new debugging solutions and OpenBoard Package

### **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
- web portal for rendering dynamic menu content for Streaming service

### **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**

### **Prompt Engineering and Generative AI for firmware stack**

2023 - 2024

**Description:** Solution design for accelerated silicon tape-in with accelerating firmware deliveries

- Work task summarization with Azure LLM Open AI services (GPT3.5 and GPT4)
- Code Review against standard static code analysis and common vulnerabilities finding
- Generation of Code Enhancement suggestion

### **Platform Provisioning with Pre-Production Reference Board**

2023 - 2024

**Description:** Platform Provisioning with automating most common features for pre-production server processor such as:

- Remote BMC and BIOS Firmware Flashing
- OS Deployment from artifactory through Jenkins Pipeline
- Boot to EFI Shell and OS

- Configuration of Initial system setup with Jenkins pipeline steps with Baseboard management controller RedFish API

## Universal Scalable Firmware

2022 - 2024

**Description:** Architecture design of Platform orchestration layer for Firmware Configuration

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

## Firmware Automation Framework

2020 - Present

**Description:** Lead SDL for an automation foundation framework for high scaled volume of silicon devices with edk2 UEFI firmware;

- Seamless configuration of system without any manual intervention for BIOS configuration.
- SDL activities like legal compliance, security, licensing, static code analysis
- Continuous deployment and test with jenkins and tox configurations
- Release Artifact management to JFrog Artifactory using GitHub Actions
- <https://github.com/intel/xml-cli>

## Multiview Video Summarization

2019 - 2020

**Description:** Summarizing video of multiple view angles of egocentric location in to one to generate effective video summary, minimizing overhead to explore multiple cam feed to discover accidents or anomalies.

## Streaming Box

2017 - 2018

**Description:** An alternate streaming service to DTH and providing easy customized IPTV streaming service based on Kodi (formerly xbmc) Framework

- Backend Streaming Service, authentication and server security with Django Framework and REST API
- Web Portal to enable vendor customize Streaming Front-end UI for their users
- Cross compilation and Native compilation to enable various platform support as Android, Windows and MacOS

## EDUCATION

<b>M.Tech Computer Science</b> Nirma University, GPA: 8.49	Jul 2018 - Jun 2020
<b>B.E. in Computer Science and Engineering</b> CGPA: 8.08	Aug 2013 - Apr 2017 Gujarat Technological University,
<b>12th Science, GSHSEB, Class XII</b> Science Stream, 74.92%	Jun 2011 - Mar 2013
<b>GSHSEB, Class X</b> 81.4%	Jun 2010 - Mar 2011

## ACHIEVEMENTS

<b>2023</b>	Firmware Configuration Presentation at UEFI Developers Conference & Plugfest
<b>2023</b>	Tech Talk on Harnessing Multiprogramming across CPU, GPU and Quantum Processing Unit
<b>2019-Present</b>	4000+ reputation on Stackoverflow
<b>2017-Present</b>	Active volunteer on Peer Learning, Cultural and team building activity
<b>2018</b>	Rank #1 for Python challenges on hackerrank
<b>2018</b>	Rank #112 from 2lacs+ participants in Techgig's National Coding Contest 2018

## PUBLICATIONS

- [Firmware Configuration – Past, Present, and Future](#). Presentation, UEFI DevCon 2023 2023