Sahil Garg

GenAI & ML Engineer | Backend Java Developer | Post-Graduate Degree (MTech in AI&ML) | IIIT Pune

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PROFESSIONAL SUMMARY

Backend and ML, GenAI Engineer with **3.5 years of experience** building scalable backend systems, REST APIs, microservices, ML analytics service and LLM-powered automation tools. Strong expertise in **Java, Spring Boot, Python, SQL, Azure**, and advanced Generative AI workflows using **Azure OpenAI, LangChain, RAG, LLM-based agents**, and analytics copilots. Proven track record delivering production-grade backend services, designing AI-driven developer tools, and contributing to patented ML/AI systems for semiconductor analytics.

TECHNICAL SKILLS

GenAI Tools & LLMs: Azure OpenAI, LangChain, RAG, Embeddings, LLM Agents
ML / AI: Python, PyTorch, Scikit-learn, CV, Time Series ML
Backend Engineering: Java, Spring Boot, REST APIs, Microservices, SQL, PostgreSQL
Cloud & DevOps: Azure DevOps, Jenkins, GitHub Actions, GitLab CI/CD
System Design: Distributed Systems, Data Pipelines, Reliability APIs
Tools: Git, Swagger, Postman, HighCharts, Docker
Containers & Orchestration: Docker, basic Kubernetes exposure

PROFESSIONAL EXPERIENCE

Research and Development Staff Engineer — June 2022 - Present

Synopsys India Pvt. Ltd, Bangalore, India

- **Silicon Infield Fleet Analytics (Backend + ML Integration)** June 2022 - September 2023
  Tools: Java, Spring Boot, PostgreSQL, Azure, ML Algorithms, Python
  - Developed **15+ scalable REST APIs** enabling real-time fleet-level analytics for automotive chips.
  - Integrated ML-based anomaly detection (uni-variate & multivariate) using Azure Cognitive Services, reducing false alerts by **30%**.
  - Engineered mission profile & reliability APIs, contributing to a **patent-approved solution**.
  - Built Azure DevOps pipelines automating tests/security scans, shortening release cycles by **40%**.
- **SLM GPT Analytics Assistant (LLM Agent integrated with Backend APIs)** October 2024 - September 2025
  Tools: Azure OpenAI, LangChain, Python, HighCharts, LLM Agents
  - Built an LLM agent that translated natural-language queries into backend data extraction + visualization logic.
  - Automated chart generation & analysis workflows, reducing analyst effort by **70%**.
  - Designed LLM "tools" to interface with microservices, enabling multi-step reasoning in analytics.
- **AI-Driven Code Review Automation (LLM Agent integrated with Backend APIs)** April 2024 - Present
  Tools: Azure OpenAI GPT-4, GitHub Actions, Jenkins, RAG, Embeddings, LLM Agents
  - Built an LLM-based automated PR review system capable of analyzing code diffs, architecture flow, and coding-standard violations.
  - Phase-1: Implemented an **internal LLM agent** using Azure OpenAI + LangChain for contextual code reasoning.
  - Phase-2: Developed a **fine-tuned model** on internal codebase + PR history, improving feedback accuracy by **42%**.
  - Integrated with **GitHub Actions + Jenkins** for continuous automated reviews and inline suggestions.
  - Reduced code review turnaround time by **35%** and improved developer onboarding and code comprehension.
- **Silicon.da Cloud Monitor Analytics and Diagnostics (Backend + Analytics)** October 2023 - Present
  Tools: Java, Spring Boot, GWT, Elastic Search, Cassandra, Statistical/ML libraries, RPC
  - Developed Monitor Analytics feature, enabling fast retrieval and visualization of silicon test, simulation data.

  * Integrated new analytics logic using statistical/ML libraries and exposed them via REST/RPC services, improving data accuracy and insight generation.
  * Optimized and modernized the Diagnostics workflows by adding new reports, supporting the migration of users from on-prem tool to Silicon.da Cloud.
  * Enhanced overall backend architecture for both feature packages, ensuring smooth interoperability with existing modules and legacy client interfaces (GWT).
- **Digital Twin — Synthetic Data Generation Engine (Python + ML)** January 2023 - June 2023
  Tools: Python, Numpy, Pandas, Statistical Modeling
  * Built high volume synthetic silicon data generator (statistical + ML) simulating sensor patterns & anomalies.
  * Presented and published internally at Synopsys engineering forum.

EIS Intern Developer (Backend + Computer Vision) **June 2021 - March 2022**
Tata Consultancy Service, Pune, India

- Worked on CV-based depth analysis & segmentation in ADAS level-4 simulation workflows.
- Designed graph-based structures to organize complex ADAS test scenarios.

Student Intern (Backend + Machine Learning) **January 2018 – May 2018**
Center for Artificial Intelligence and Robotiocs (CAIR), DRDO, Bangalore, India

- Developed an API to dynamically cluster & visualize maritime traffic data.
- Integrated ML-geospatial grouping for interactive map-based insights.

EDUCATION

Master of Technology, Artificial Intelligence (CSE) **CGPA - 9.50 / 10.0**
Indian Institute of Information Technology Pune, India *September 2020 - May 2022*

Bachelor of Technology, Computer Science and Engineering **CGPA: 7.27 / 10.0**
Punjab Engineering College (Deemed to be University), Chandigarh, India *August 2015 - June 2019*

XII (Senior Secondary Examination) **CBSE Board Percentage: 94.6 %**
Central Board of Secondary Education, India *June 2015*

PROJECTS

- **Optical Disk and Hard Exudates segmentation in FUNDUS images** , ResNet18-based ML solution for ROI segmentation in FUNDUS images using PyTorch and using the VGG16 pre-trained in Keras.
- **Selective Image Compression**, Low memory storage for Fundus images by selectively compression of ROI.
- **Generative AI Applications with RAG and LangChain**, Interactive QA bot from loaded documents using RAG, LangChain and LLMs.

PATENT AND PUBLICATIONS

- **Patent -** Using Advanced Analytics to Improve Reliability of Automotive Semiconductors (Filed with USPTO)
- **Research Paper -** A novel approach to generate synthetic data for silicon (Synopsys Internal)

CERTIFICATIONS AND COURSES

- **IBM AI Engineering Certification (Issued - May 2025)**
- **Matrix Algebra for Engineers**
- **Neural Networks and Deep Learning**

ACHIEVEMENTS & EXTRACURRICULAR ACTIVITIES

- Received several awards and spot bonuses in Synopsys.
- MTech College and Gold Medalist.
- Organized multiple college Technical Fests, Robotics & coding events.
- Volunteered in multiple Synopsys & NSS social service education programs.

INTERESTS

Reading Books, Cooking, Traveling, Playing badminton and volleyball.