Avinash Mallick

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Profile

AI systems engineer specializing in agentic AI platforms, context engineering, and production-scale GenAI infrastructure. Designing and deploying LangGraph-based workflows, RAG pipelines, and observability-driven AI microservices across venture-backed and enterprise environments. Experienced in building distributed AI systems, scalable backend architectures, and evaluation-driven workflows that improve reliability of long-running agents. Award-winning developer recognized for innovation in AI-powered software modernization and distributed system design.

Education

University College London *Sept 2024 – Sept 2025*
Master of Science, Software Systems Engineering

- **Grade:** Merit
- **Coursework:** Engineering of Data Analysis, Applied Deep Learning, Software Development Practices

Hindustan Institute of Technology and Science *July 2019 – April 2023*
Bachelor of Technology (Honours), Computer Science and Engineering

- **Coursework:** Data Structures, Algorithms, Machine Learning, Cloud Computing, Compiler Theory, Distributed Systems
- **Student of the Year Award:** Recognized for outstanding academic performance and leadership among 3000+ graduating students

Experience

AI Systems Engineer - Consultant *London, UK*
Post Urban Ventures *Oct 2025 – Present*

- Architecting agentic AI infrastructure for venture-backed products including Chelo.ai, designing scalable RAG pipelines, knowledge graph integrations, and LangGraph-based orchestration for production workflows
- Built modular AI microservices using FastAPI and Python, enabling rapid prototyping and deployment of LLM-powered automation across startup environments
- Designed cloud-native backend systems integrating WhatsApp Business APIs, analytics engines, and AI-driven workflow automation for enterprise-facing platforms
- Advising founders and engineering teams on GenAI architecture, deployment strategies, and scalable AI system design across AWS-based environments

AI Engineer *London, UK*
Converso *Nov 2025 – Present*

- Designing and Deploying LangGraph-based conversational AI agents for CRM automation, designing structured ingestion pipelines and retrieval systems for enterprise-scale datasets
- Architected and deployed a self-hosted Langfuse observability stack from scratch, integrating Agentic AI microservices with end-to-end tracing, structured logging, evaluation workflows, and production-grade metrics for context engineering
- Developed scalable document processing and RAG pipelines leveraging embeddings, vector search, and structured validation to improve reliability of AI-driven customer support workflows
- Collaborated with product and engineering teams to ship production-ready AI features with strong monitoring, evaluation, and performance optimisation practices

Software Engineer, Contract (Joint UCL-IBM Collaboration) *London, UK*
IBM *June 2025 - Sep 2025*

- Architected Agentic Anti-Pattern Remediation System using RAG pipelines with LangChain + LangGraph, reducing legacy code modernization time by 60% and achieving 85% anti-pattern detection precision on 10,000+ lines of Java code
- Designed and Implemented agent workflows using DSPy and Granite LLMs, with FastAPI, Pydantic, and TinyDB backend architecture, processing large-scale codebases with 60% modernization speed-up
- Collaborated with UCL research teams to advance AI-powered software modernization methodologies

Associate Software Engineer *Bangalore, India*
Eurofins Scientific - Eurofins IT Delivery Centre *June 2023 – Sep 2024*

- Delivered full-stack eCommerce solutions handling 25,000+ monthly transactions, improving checkout conversion rates by 12% through optimized UI/UX implementations using C#, ASP.NET, and SQL
- Spearheaded Azure cloud segregation initiative serving 15,000+ users across 8 global regions, reducing deployment time by 45% and infrastructure costs by £30,000 annually
- Engineered cross-tenant networking solutions using v-net peering, enabling seamless data flow for 200+ microservices with 99.8% reliability

Achievements

- **AI Tooling in SDLC Hackathon at Tessl HQ Usecase Winner:** "Winner – Best Use Case of ACI.dev Award" Recognized for developing a creative Anti-Pattern Remediation Tool that leveraged local LLMs, integrated GitHub codebase interaction via MCP, and automated legacy code refactoring workflows
- **DataStax Hacking Agents Hackathon Winner:** "Best Use Case of Langflow Award" for innovative COBOL-to-Python migration solution, competing against 150+ participants from across Europe
- **Student of the Year:** Hindustan Institute of Technology and Science (2023) - Highest academic achiever among 500+ Computer Science graduates
- **Performance Excellence Recognition:** Eurofins Scientific - Exceeded delivery targets by 130% and received "Outstanding Contributor" award for cross-functional collaboration

Projects

TopoIndex Python Library PyPI Package

- Developed molecular analysis library processing 1,000+ chemical compounds daily, supporting QSAR research for 200+ pharmaceutical researchers globally
- Achieved 99.7% accuracy in topological index calculations, reducing computational time by 55% compared to existing solutions
- **Technologies:** Python, RDKit, NetworkX, Poetry, PyPI, GitHub Actions

Agentic COBOL to Python Migration GitHub Repository

- Created AI-powered code migration framework achieving 78% automated conversion accuracy on legacy COBOL systems containing 50,000+ lines of code
- **Award Winner:** DataStax Hacking Agents Hackathon - "Best Use Case of Langflow" among 150+ participants
- **Technologies:** Langflow, Python, Semi-Formal Verification, LLMs

Distributed QML Circuit Simulator GitHub Repository

- Architected distributed simulation pipeline executing 300,000+ MNISQ circuits across 12 Ubuntu VMs, achieving 40% performance improvement over centralized approaches
- Conducted 24-hour stress testing validating system reliability under 10TB+ data processing loads with 99.95% uptime
- **Technologies:** Ansible, Dask, Apache Spark, MPI, Qiskit Aer, QuEST, Ubuntu Server

Technical Skills

Programming Languages: Python, C#, Java, SQL, JavaScript, TypeScript (Angular)

Frameworks & Technologies: .NET Core, ASP.NET, Angular, WatsonX, Langflow, LangChain, LangGraph, DSPy, LlamaIndex, Pydantic, FastAPI, TinyDB, Qiskit, Apache Spark, Docker, Ansible

Cloud & DevOps: Azure Cloud, IBM Cloud, v-net peering, DevOps, Git, GitHub Actions

Databases & Tools: SQL, Entity Framework, RDKit, NetworkX, Poetry, PyPI