

Omveer Singh

Software Engineer · Data Analytics

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🌐 LinkedIn | 🐙 GitHub | 🔑 GitLab | 🌐 Portfolio



PROFESSIONAL SUMMARY

Software Engineer with 8+ years of experience designing and developing Python and C++ software, building automated QA frameworks, and delivering reliable data-processing systems in international research environments. Skilled in Linux, CI/CD, test automation, and scientific computing, with proven success in performance optimisation, software quality improvement, and large-scale data analysis. Adept at collaborating across multidisciplinary teams and transforming complex requirements into maintainable, well-documented software solutions.

CORE SKILLS

Languages	Python, C++, C, SQL, R
Data & Analysis	Pandas, NumPy, statistical analysis, data validation & cleaning, Jupyter, Microsoft Excel
Machine Learning	Supervised learning, regression, classification (DeepLearning.AI Specialization)
Software Eng.	OOP, design patterns, automated testing, code review, QA, CI/CD, Agile
Tools & DevOps	Git, Docker, CMake, Bash, Linux / Ubuntu, HPC
Visualisation	Matplotlib, Tableau, ROOT

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher – Software & Data Systems Goethe University Frankfurt

Mar 2023 – Sep 2025

Frankfurt am Main, Germany

Technologies: Python, C++, Git, CI/CD, Docker, Linux, Data Validation, Test Automation, Scientific Computing, ROOT, CMake

- Designed and built a Python / C++ QA framework that validates large simulation and experimental datasets across multiple detector subsystems, cutting manual validation effort and surfacing regressions automatically.
- Integrated automated quality checks into CI pipelines, improving reliability, reproducibility, and regression detection across the collaboration.
- Engineered a CAD → GDML → ROOT data pipeline to ingest complex 3D geometry models into simulation workflows.
- Reduced geometry-processing runtime by 8× by replacing tessellated models with optimised primitives while preserving physics and material accuracy.
- Built analysis and visualisation tools to compare datasets and inform collaboration-wide data-quality decisions.

Professional Development & Career Transition

Oct 2025 – Present

Darmstadt, Germany

Technologies: Python, C++, Qt, SQL, Machine Learning, Data Analytics, Git, Linux

- Completed the Google Data Analytics Professional Certificate and Machine Learning Specialization to strengthen industry-focused data and software engineering skills.
- Learning Qt and modern C++ application development for cross-platform desktop software.
- Created interactive data visualisations and dashboards published on Tableau Public to communicate analytical insights and support data-driven decision making.
- Continuing German language studies while actively pursuing software engineering and data-focused opportunities in Germany.

Software Engineering Intern GSI Helmholtz Centre for Heavy Ion Research (FAIR)

Jul 2022 – Dec 2022

Darmstadt, Germany

Technologies: C++, CMake, Git, Linux, Build Systems, Software Architecture

- Led the migration of a large legacy build system to a modern, target-based CMake architecture.
- Improved modularity, dependency handling, and cross-platform builds; authored developer documentation adopted as the collaboration standard.

Technologies: Python, C++, Linux, Data Analysis, Statistical Modelling, Scientific Computing, ROOT

- Built C++ / Python analysis workflows for large high-energy-physics datasets; performed statistical and multifractal analyses.
- Ran simulation-driven optimisation studies and translated results into concrete configuration recommendations.
- Delivered reproducible, well-documented analysis pipelines for collaborative use; co-authored 20+ peer-reviewed publications.

SELECTED PROJECTS

QA Data Framework. Python / C++ framework for automated validation of detector datasets, with CI-integrated quality checks, regression detection, and monitoring dashboards.

Geometry Pipeline. Automated CAD-to-simulation conversion workflow (CAD → GDML → ROOT) supporting tessellated and simplified object geometry.

Performance Optimisation. 8× runtime reduction achieved by replacing tessellated geometry with simplified primitives while preserving material budgets and analysis fidelity.

Build-System Modernisation. Refactored a complex scientific codebase into a modular CMake build with improved dependency management and maintainability.

EDUCATION

Ph.D., Experimental High-Energy Physics — Aligarh Muslim University, India *2015 – 2022*

M.Phil. & M.Sc., Physics — Aligarh Muslim University, India *2011 – 2015*

B.Sc. (Hons.), Physics — Aligarh Muslim University, India *2008 – 2011*

CERTIFICATIONS

- Google Data Analytics Professional Certificate — Google (Coursera), 2026
- Machine Learning Specialization — DeepLearning.AI (Coursera), 2025
- Databases and SQL for Data Science with Python — IBM (Coursera), 2025
- Python for Data Science & R Programming — Udemy, 2025
- [View all certifications](#)

ADDITIONAL INFORMATION

Languages: English (fluent), German (A1, actively learning)

Work Authorisation: Eligible to work in Germany / EU

Availability: Based in Darmstadt; open to roles across Germany / EU, hybrid or on-site

Publications: 20+ peer-reviewed publications: [full publication list](#)

Data Visualisation: [Tableau Public Portfolio](#)

Darmstadt, June 19, 2026

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