

Amit Vikram Singh

R&D ENGINEER | OPTICAL SYSTEMS | INDUSTRIALIZATION

Munich region, Germany

[linkedin.com/in/amit-vikram-singh-7ba45689](https://www.linkedin.com/in/amit-vikram-singh-7ba45689)

github.com/AmitVSingh | amitvsingh.netlify.app



Professional profile

R&D and optical systems engineer with cross-functional experience spanning industrial UV technology and semiconductor lithography. Combines optical design, simulation, validation, industrialization, and structured problem-solving to develop systems that are technically robust, operationally reliable, and scalable across the product lifecycle.

Professional experience

R&D Engineer - LED Modules & Optics | Hönle AG, Germany 06/2026 - Present

- Develop optical concepts for industrial UV systems, including UV LED modules, reflectors, lens arrays, irradiance shaping, and protective test enclosures.
- Build and automate non-sequential optical simulations in TracePro; parameterize geometries and evaluate irradiance uniformity, power, dose, sensitivity, and manufacturability.
- Characterize UV sources and detector configurations using ray files, IES data, far-field analysis, and Python-based post-processing and KPI dashboards.
- Plan validation experiments, alignment and tolerance studies, and supplier/component evaluations while connecting design decisions with production and documentation workflows.
- Collaborate across engineering, purchasing, production, and suppliers to translate technical requirements into practical, reliable product solutions.

Design / Industrialization Engineer | ASML Netherlands 11/2022 - 10/2025

- Supported development and industrialization of EUV lithography systems, including EXE:5000 and NXE:3800E, with focus on serviceability, reliability, availability, and lifecycle readiness.
- Performed optical module-level problem analysis, specification validation, algorithm derisking, and performance-impact studies using MATLAB.
- Prepared evidence-based test and analysis reports that supported management decisions for volume-up and product release.
- Resolved factory and field escalations through root-cause analysis and cross-sector collaboration with design, factory, customer support, and functional clusters.
- Led workshops, training, and knowledge-transfer activities to improve serviceability practices and reduce communication barriers across teams.

Core competencies

Optical engineering	Non-sequential ray tracing, illumination design, UV optics, optical metrology, tolerancing, source and detector characterization
Tools	TracePro, Lumerical, MEEP, JCMWave, MATLAB, Python, R
Product development	Requirements, concept development, simulation, validation, NPI, reliability, serviceability, RCA, factory and field support
Collaboration	Cross-functional stakeholder alignment, technical reporting, supplier evaluation, workshops, training, and knowledge transfer

Education

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- Ph.D. in Physics / Optics | Friedrich Schiller University Jena, Germany** **10/2014 - 01/2022**
Dissertation: Spatiotemporal evolution of non-diffracting plasmonic pulses. Methods: FDTD, FEM, and BPM; tools included Lumerical, MEEP, JCMWave, MATLAB, and POV-Ray.
- M.Tech. in Applied Optics | IIT Delhi & University of Stuttgart** **07/2011 - 05/2013**
Optical metrology, lasers, holography, optical instruments, and aspheric optics. DAAD exchange student.
- B.Sc. and M.Sc. in Physics | University of Allahabad, India** **07/2006 - 05/2009**

Selected certifications and professional development

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- MIT Professional Education - Industry 4.0 program (ongoing): smart manufacturing, technology roadmapping, product platforms, and applied generative AI.
 - Optical Design certificates - University of Colorado Boulder: paraxial optics, throughput and resolution, and optical aberrations (2025-2026).
 - Professional Data Science certificates: Python (IBM) and R (Harvard University), including forecasting and recommendation-system capstone projects (2018-2019).
 - ASML development programs: effective communication, high-performing teams, personality assessment, factory internship, and cross-sector ways of working (2023-2024).

Research and publications

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- First-author publications in OSA Continuum (doi.org/10.1364/OSAC.392840) and Optics Express (doi.org/10.1364/OE.439764).
 - Designed plasmonic and photonic structures using FDTD/FEM/BPM and worked in a multidisciplinary, multinational research team.
 - Hands-on optical metrology: phase-singularity displacement measurement, white-light interferometry for group-delay dispersion, and fiber-spectrometer source development.

Languages

Hindi - Native	English - C2	German - B1; B2 in progress
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Honours and recognition

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- DAAD scholarships for doctoral research in Germany (2014) and master thesis work at the University of Stuttgart (2012).
 - CSIR-NET qualification for lectureship at Indian universities (2011).
 - GitHub Arctic Code Vault Contributor (2019).