



# Shardul Kulkarni

AI and Software Engineer

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🔗 shardulkulkarni14.github.io/portfolio/

📍 Johann-Gottlob-Nathusius-Ring 7,  
39106, Magdeburg

## 🧠 SKILLS

### Programming Languages

- Python, C++, Java, Go, Solidity, SQL, R, Shell Scripting, C, HTML/CSS, JavaScript.

### Data Science

Machine Learning, Computer Vision, Deep Learning, Generative AI, NLP, Recommender Systems

### Libraries & Frameworks

- PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, HuggingFace, LangChain, Numpy, Pandas, Plotly, Tensorboard, Captum.

### Tools & Technologies

- Git, VS Code, Jupyter, Streamlit, Flask, Linux Server Setup, NAS Systems, REST APIs, Docker.

### MLOps & DevOps

Docker, CI/CD (Azure DevOps, GitHub Actions), Airflow, Model Versioning, Testing & Validation, Monitoring Pipelines

### Cloud/Databases

- Azure (**strong**), Google Cloud Platform (**basic**), Firebase, MongoDB, MySQL, Oracle.

## 📁 PROFESSIONAL EXPERIENCE

04.2025 – Ongoing  
Ingolstadt, Germany

### AI & Software Engineer, MAindTec GmbH

- Onboarding to build a scalable RAG pipeline for document search.
- Using Pinecone, LangChain, and Azure containers for deployment.

12.2024 – 03.2025  
Magdeburg, Germany

### Research Assistant - Generative AI, Otto-von-Guericke University

- Developed a **RAG pipeline** to interpret **medical workflow specifications**.
- Researched and implemented **generative AI models for healthcare applications**.
- Explored **LLM fine-tuning** and **agentic AI patterns** for intelligent data retrieval.

03.2023 – 03.2025  
Magdeburg, Germany

### AI and Software Engineer - Work Student, mediMESH - Clinical Insights

- Optimized AI pipelines, reducing **processing time by 99.84%**.
- Built **large-scale video processing systems** with deep learning and cloud AI.
- Deployed **YOLO-based multi-camera tracking** for healthcare analytics.
- Led **Azure deployments**, ensuring scalability and security.
- Designed **DevOps pipelines** with **CI/CD (Azure DevOps, GitHub Actions)**.
- **Set up and managed multiple Linux servers & NAS systems** for AI model hosting.
- Integrated **RAG pipelines** for medical workflow analysis.
- Worked with **international clients**, successfully delivering AI solutions.

07.2020 – 09.2020  
Pune, India

### Data Science Intern, CentrexLabs

- Optimized **ETL pipelines**, reducing processing time by **99%**.
- Built **ML models for predictive analytics** in business intelligence.

## 📁 PROJECTS

03.2024 – 10.2024

### Multi-Perspective Video Analysis System,

Master Thesis (In Collaboration with mediMESH) - Grade: 1.3

- Designed **custom YOLO models** for hospital environments, ensuring high accuracy.
- Built a **multi-camera, multi-object tracking system** using **PyTorch**.
- Developed a **feature and detection-based tracking algorithm** outperforming **SOTA**.

05.2023 – 09.2023

### Validating Attribution Techniques using Deep Learning, (Group Project - OVGU) ☑

- Analyzed **GradCAM, SmoothgradCAM++, ScoreCAM, LayerCAM** on **ResNet18, ResNet50, VGG16, InceptionV3**.
- Processed **16K perturbed images** to assess model robustness and vulnerabilities.
- Evaluated **model sensitivity** by **occlusion-based perturbation & adversarial noise**.

10.2020 – 06.2021

### System for Waste Management: Smartzzy, Bachelor Thesis ☑

- Developed a **deep learning-based waste segregation system** using **Raspberry Pi**.
- Applied **IoT technologies**, enhancing **efficiency**, leading to **patent publication**.

08.2020

Farmer’s Mart, SIH Hackathon Project

• Developed an e-commerce platform connecting farmers and consumers.

• Built an ML-based recommendation system for personalized product suggestions.

• Implemented best pricing analysis for farmers.

• Top 5 finalist at Smart India Hackathon 2020.

EDUCATION

2022 – 2024 Magdeburg, Germany	<b>Master of Science - Data and Knowledge Engineering</b> , Otto Von Guericke University <b>GPA - 1.7</b> <b>Subjects:</b> Machine Learning, Deep Learning, Data Mining, Computer Vision, Recommender Systems, Cloud DevOps, Visual Analytics, Natural Language Processing, Data Warehousing, Distributed Data Management, Generative Models.
2017 – 2021 Pune, India	<b>Bachelor of Engineering - Computer Engineering</b> , Savitribai Phule Pune University <b>GPA - 1.4</b> <b>Subjects:</b> Data Structures, DBMS, Data Analytics, Machine Learning, AI.
06.2019 – 07.2019 Athens, Greece	<b>Undergraduate Fellowship Summer Project and Research Program</b> , Athens Information Technology Developed a Blockchain Proof of Concept (PoC) for IoT-based transportation of sensitive goods using Ethereum Blockchain and Solidity.

PATENT

09.2022	<b>Smart Parkade</b> , Application number: 202121011511, Region: India, Status: Published.
09.2022	<b>Smartzzy</b> , Application number: 202121011507, Region: India, Status: Published

AWARDS & CERTIFICATIONS

(08.2020) - Microsoft Technical Associate for Introduction to Programming Using Python.

(03.08.2020) - Smart India Hackathon 2020 Finalist - Top 5 projects (Government of India)

Hackathon Awards - Winner and runner-up in various national hackathons and project exhibitions.

LANGUAGES

English C1	<div><div></div><div></div><div></div><div></div><div></div></div>	German A2 (Currently improving)	<div><div></div><div></div><div></div><div></div><div></div></div>
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