Rohan Sanjay Patil

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PROFILE

MSc Artificial Intelligence student specializing in high-scale Computer Vision and RAG systems, with experience processing high resolution medical imaging and industrial document automation. Focused on building ML pipelines that bridge the gap between research and real-world deployment

EDUCATION

Master in Science (MSc) in Artificial Intelligence, *THWS*
2025 – Present | Würzburg

Bachelor of Engineering (BE) in Computer Science and Engineering, *BMSIT*
2020 – 2024 | Bangalore, India

LANGUAGES

English — C1

German — B1

SKILLS

AI/ML
PyTorch, YOLOv8, R-CNN, scikit-learn, RAG, Computer Vision, Reinforcement Learning

Data/MLOps
ETL Pipelines, Docker, Weights & Biases, Git, SQL, REST API, Data Visualization (Tableau/Power BI)

Programming
Python, JavaScript, C++, Java, SQL, Flask, React

CERTIFICATES

The Data Science Course: Complete Data Science Bootcamp 2024: Udemy

Train ML Models for Document Understanding: UiPath

WORK EXPERIENCE

Student Assistant (HiWi), *Julius Maximilians universität*
Present | Würzburg, Germany

- Implementing RAG systems to digitalize workflows for German startups, enabling semantic search across documents.
- Building ETL pipelines to structure knowledge bases for LLM integration
- Developing web interfaces for data visualization using React and Flask

ML and Research Intern, *Compsoft Technologies*
Bangalore, India

- Benchmarked 6 OCR engines across 8 document types, informing vendor selection
- Built Python pipeline processing 5,000+ records/run, reducing manual entry by 85%
- Identified 12 critical defects in Automated Parking System, improving reliability by 25% and reducing latency by 1.6s

PROJECTS

H.Pylori Detection in Veterinary Biopsy,
Masters Project with Laboklin
Present

- Engineered **hierarchical detection pipeline for 5×5px bacteria** in 150K×60K WSI images.
- Implemented active learning with YOLOv8 and R-CNN, **improving mAP50 from 41% to 50% and discovering 300+ correct annotations** missed by pathologists in 1st iteration.
- Built a complete preprocessing pipeline with QuPath for gland segmentation, 512px patch extraction and hotspot identification.

BMW Lessons Learned System,
A Platform for Quality Analysis and Solution Retrieval
11/2025

- Developed **RAG system** structuring 1,000+ incident reports for semantic search, achieving high relevance in user testing
- Built analytics dashboard with Plotly/Power BI for **cross department trend analysis**
- Implemented **hybrid retrieval (Database+API)**

Blackjack as a Testbed for Reinforcement Learning, *Monte Carlo, Q-Learning, and Double Q-Learning Under Realistic Conditions*
08/2025

- Created RL simulation environment with 100K–5M hands, implementing **Monte Carlo, Q-Learning, and Double Q-Learning under realistic casino conditions** (card counting, rule variations with 0-4% gain for the House)
- Improved natural Blackjack win rate from 2.29% to 2.75% using Double Q-Learning, **demonstrating 20% performance gain over baseline** Monte Carlo methods

Urban Safety Pattern Analysis:An Ensemble Learning Approach, *Bachelor's Final year project*
06/2024

- Engineered a **high-performance ensemble framework** integrating k-NN, Random Forest, and Extra Trees classifiers.
- Achieved a **97% F1-score** and **93.5% accuracy** in analyzing historical socio-economic data patterns.
- Developed an **end-to-end predictive pipeline** to visualize, process large-scale datasets and the data imbalance.