

Roman Naeem

PhD · Machine Learning & Computer Vision

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PROFILE

PhD in machine learning and computer vision with more than five years of experience training and validating deep models on large, complex data. Comfortable taking methods from prototype to working software, with reproducible pipelines and rigorous evaluation that checks whether metrics track the outcome that matters. Motivated by building robust models that turn into working solutions with real-world impact.

EXPERIENCE

PhD Student · Chalmers University of Technology, Gothenburg	2021–2026
- Design and train deep learning models on large, complex 3D data, including Transformer, CNN, and U-Net architectures for segmentation, detection, registration, and structured prediction. - Build end-to-end training and evaluation pipelines with reproducible workflows, modular code, experiment tracking, and systematic failure-mode analysis. - Deliver applied end-to-end pipelines in collaboration with external partners, taking projects from requirements to a working, validated solution; first-author work at MICCAI, AAAI, and ICPRAI.	
Research Assistant · Chalmers University of Technology, Gothenburg	2020
Built an Android app integrating on-device object detection, OCR, and database lookup for inventory.	
Master Thesis Project · Whywaste AB, Gothenburg	2020
Built an automated shelf inventory system with object detection and segmentation, using real/synthetic data.	
Assistant Business Manager · PTCL, Pakistan	2017–2018

SELECTED PUBLICATIONS

- Transformer-based centerline extraction** for tracking tubular tree structures such as blood vessels. Trexplorer (*MICCAI 2024, first author*), Trexplorer Super (*MICCAI 2025, first author*), RefTr (*MICCAI 2026, first author*).
- Efficient dense feature extraction and image segmentation**. ARTA, adaptive mixed-resolution token allocation (*under review 2026, shared first author*); SwInception (*ICPRAI 2024, second author*).
- Clinical centerline analysis** for automated post-EVAR follow-up. CEVAR (*MLMI 2026, first author*).
- Antibiotic resistance prediction** via gene-based testing using RL. GenoARM (*AAAI 2025, third author*).

TECHNICAL SKILLS

Programming	Python, C++, CUDA, MATLAB
Computer Vision	Segmentation, object detection, dense prediction, efficient/resolution-adaptive architectures, image-to-graph & geometry-aware learning
Deep Learning	PyTorch, TensorFlow, Transformers/DETR-based and recurrent models, CNNs, reinforcement learning, self-/semi-supervised learning
ML Infra & Engineering	Reproducible pipelines, multi-GPU training, model optimization, evaluation & benchmarking, failure-mode analysis & debugging, experiment tracking (W&B), Git, code review, Linux, Docker, GCP

EDUCATION

PhD, Electrical Engineering	2021–2026
Chalmers University of Technology, Gothenburg	
MSc, Complex Adaptive Systems	2018–2020
Chalmers University of Technology, Gothenburg	
BSc, Electrical Engineering	2012–2016
National University of Sciences and Technology, Pakistan	

LANGUAGES

English	Advanced
Swedish	Intermediate
Urdu	Native
Pashto	Native

References available upon request.