

Farrukh Nauman

AI Solutions Consultant | Generative AI, LLMs & Computer Vision | PhD in Physics

farrukhnauman@gmail.com | (+46) 0702984959 | LinkedIn: [fnauman](#) | Github: [fnauman](#)
Honnörsgratan 1 LGH 1405 Linköping 58754 (Sweden)

SUMMARY

AI Solutions Consultant specializing in Large Language Models (LLMs), Generative AI, and Computer Vision. Proven track record in developing and deploying state-of-the-art generative models, custom LLM solutions, and advanced vision systems that deliver measurable business impact. Expert in translating business needs into scalable AI architectures, with successful applications in document intelligence, industrial automation, and knowledge management.

CONSULTANCY OFFERINGS

- **Generative AI & LLMs:** Custom LLM and generative AI systems development for synthetic data generation, and smart assistants.
- **Computer Vision:** Automated process optimization using computer vision systems that reduce manual inspection costs by 40-60%.
- **Retrieval Augmented Generation (RAG):** Smart knowledge management and document Q&A using cutting-edge RAG systems.
- **AI Strategy & Technical Advisory:** Guiding organizations in adopting LLMs and vision AI, from feasibility to deployment.

SKILLS

- **Generative AI & LLMs:** Prompt Engineering | Synthetic Data Generation | RAG Pipelines | Text-to-Image | Inpainting.
- **Computer Vision:** Object Detection | Image Classification | Segmentation | OCR | Feature Extraction | Visual Embeddings | Edge AI.
- **AI Solution Architecture:** ROI-Driven System Design | MLOps | Data Strategy | Cloud Development (Azure).
- **Programming:** Python (8+ years) | Pytorch (6 years) | Deep Learning (6 years) | Huggingface Transformers | Diffusers.
- **Languages:** English (fluent) | Swedish (beginner) | Urdu (native).
- **Consulting & Business Skills:** Stakeholder Engagement | Requirements Gathering | Project Management | Technical Leadership.

EXPERIENCE

RISE Research Institutes of Sweden AB

AI Researcher & Consultant

Linköping, Sweden

Jul 2021 -

Project Lead: Sustainable Fashion AI Automation (2022-2025): Leading two major initiatives in sustainable fashion (**Vinnova: AI for Resource Efficient Circular Fashion - Project Lead, CISUTAC - Technical Lead**).

- **Challenge:** Manual quality inspection created major bottlenecks in circular fashion supply chain, with 30% inconsistency in assessments and excessive labor costs driving up prices by 25%.
- **Solution:** Designed and implemented end-to-end computer vision system for automated attribute detection with comprehensive data infrastructure.
- **Approach:**
 - * Phase 1: Custom Data Annotation Tool Development (Flask, Streamlit, Docker). (6 months)
 - * Phase 2: Dataset enhancement and optimization (Custom apps for human in-the-loop data improvement). (4 months)
 - * Phase 3: AI model development and optimization (Pytorch, ViT, ConvNeXt, CLIP). (6 months)
 - * Phase 4: Synthetic data framework implementation (Text-to-Image models, Flux Inpainting). (4 months)
 - * Phase 5: Pilot deployment and validation (Gradio, Docker). (4 months)
- **Business Impact:** 40% reduction in processing time, 50%+ reduction in data collection costs through synthetic data generation.
- **Recognition:** Selected as 1 of only 5 projects presented at **EU event on sustainability and AI** (May 2023) and Vinnova Innovation week (Sep. 2022).
- **Deliverables:** Pilot-ready AI system, **Annotated public dataset, Roadmap for industry adoption.**

Project: RegioGreenTex (2024-2025: 4 months): Advised organizations on how to integrate Large Language Models (LLMs) for better search and retrieval of information regarding various actors in Europe in the domain of textile reuse and recycling.

- **Challenge:** Clients needed AI experts to integrate LLMs into their networking platform.
- **Solution:** Designed a custom LLM chatbot and retrieval system for both structured and unstructured data.
- **Impact:** Enabled a smart search and retrieval system for connecting textile actors in Europe.

Project: Aero EDIH (2024-2025: 2 months): Consulted with startups on data/model strategies for on-device drone deployment for tasks like vehicle/person detection in parks/forests and runway debris identification.

- Key activities: Needs assessment, data strategy formulation, model suitability analysis for edge AI.

Project: Ramverk (2024-2025: 3 months): Prepared a roadmap for air traffic control automation with consortium members.

- Key activities: Report: Reinforcement Learning state-of-the-art models for air traffic, data collection proposal.

Project: GreenerFlow (2023: 3 months): Worked on "Traffic congestion in metropolitan areas".

- Key activities: Report: Factor analysis for traffic congestion, consortium formation for a larger project.

Project: SHOW - Hard Brake Detection (2022: 1-2 months): Analyzed large amount of sensor data from autonomous buses to develop time series anomaly detection models to identify hard brakes.

- Key activities: Data analysis, model development for hard braking detection, presentations to stakeholders.

Project: Low Energy IoT Solutions for Industrial Clients (2022: 4 months):

- **Challenge:** Clients needed to process sensor data at the edge with severe energy constraints, preventing real-time analysis.
- **Solution:** Identified energy-efficient AI algorithms (miniROCKET algorithm) for edge devices that is faster than deep learning methods by over 2000x.
- **Impact:** Enabled real-time sensor data analysis with 90% lower hardware costs.

AI Mentorship Program (2023-2024):

- Established and led mentorship program for Master’s thesis students in AI, resulting in 4 industry-applicable projects.
- **Projects:** Damage Detection in Fashion, Generative AI for Fashion, Time Series Forecasting for Fashion Trends, Image Embeddings for Second-Hand Fashion.
- **Activities:** Provided hands-on training in deep learning and AI for advanced industrial AI application.

2MNordic IT Consulting AB
Data Scientist & Data Engineer

Gothenburg, Sweden
Dec 2019 - Jun 2021

Project: Early Warning System for Student Performance (6 months):

- **Challenge:** Helsingborg school district lacked ability to identify at-risk students early, resulting in up to 40% failure rate in some schools in 9th grade.
- **Solution:** Developed predictive analytics system identifying absence, poor grades in English and Math as the key indicators in 6th grade that predict 9th grade performance, with school-level feature analysis for targeted funding.
- **Impact:** Enabled early intervention for 10% of the student population, and provided data-driven policy recommendations impacting 3,000+ students.
- **Implementation:** Azure DevOps, Power BI dashboards for stakeholders, Azure Functions and Data Factory.

Project: Mathematics Assessment Optimization (4 months):

- **Challenge:** New digital mathematics test showed inconsistencies with traditional grading schemes, causing confusion and potential inequities.
- **Solution:** Conducted comprehensive data analysis of test results across 8 schools, identifying specific misalignments between grading schemes.
- **Impact:** Findings led to significant improvement in assessment accuracy and informed critical education policy adjustments affecting district-wide mathematics curriculum.
- **Unexpected Insight:** Discovered counterintuitive negative correlation between student satisfaction reviews and academic performance, leading to revision of feedback systems.

Project: Preschool Task Completion Assessment (2 months): Object Detection models for analyzing task completion by preschool kids where the task is to arrange objects in a specific order.

- Key activities: Data collection and annotation, model finetuning, evaluations.

Professional Development (2020):

- Obtained [Microsoft Azure Data Engineer Certificate](#) to enhance client solutions.

Previous Research Positions

2009–2019

- **Research Fellow, Chalmers University of Technology:** Gothenburg, Sweden
Complex systems modeling, large-scale data analysis 2018–2019
- **Research Scientist, Niels Bohr Institute:** Copenhagen, Denmark
Simulation, forecasting, computational modeling 2015–2018
- **Research Assistant/PhD Student, Univ. of Rochester:** New York, USA
Data analysis, predictive modeling 2009–2015

EDUCATION

University of Rochester
PhD in Physics and Astronomy
Focus: Complex Systems Modeling, Computational Methods, Data Analysis

Quaid-i-Azam University
M. Phil. Physics

Rochester, New York (USA)
Oct 2015

Islamabad, Pakistan
June 2009

AWARDS AND ACHIEVEMENTS

- Horton fellowship from Laboratory for Laser Energetics - full research funding award. 2010-2015
- Susumu Okubo Prize for highest performance on graduate physics comprehensive exam and excellence in coursework. 2011