Suraj Neelakantan

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Summary

Delivered data-driven insights over 6+ years by building robust SQL pipelines, developing machine learning models in Python, and designing Power BI dashboards. The current PhD research focuses on applying machine learning to challenges in geology and mining, while maintaining strong foundations in SQL, Python and data analysis; but the core work stays the same: turn complicated data into clear answers that people can actually use or understand.

Skills

Technical Skills: Python, SQL, TensorFlow, Keras, PyTorch, Deep Learning, Data Analysis

Tools & Platforms: Power BI, Excel, Microsoft Azure, Docker, Git, MLflow

Experiences

Orexplore AB — **Kista, Sweden**

Industrial Ph.D. Student — *Apr 2021 – Aug 2024*

- Developed **deep learning** models using XCT sensor data (3D volumetric) and XRF data for lithology identification and mineral segmentation.
- Conducted research to show that integrating multiple scanned X-ray data to train machine learning models improves lithology classification.
- Collaborated across multidisciplinary teams (geologists), actively driving analytical problem-solving initiatives.

HemoCue AB — **Halmstad, Sweden**

Master Thesis Student — *Dec 2019 – Sep 2020*

- Developed a deep learning solution for the WBC DIFF System, achieving 94% accuracy with 'One vs. All' classification (3% improvement).
- Implemented four CNN architectures, achieving 90.49% differential classification accuracy (6% above traditional methods).

Keystone Automotive Operations — **Bengaluru, India**

Content Analyst — *Jun 2017 – May 2018*

- Ensured data accuracy across 5,000+ automotive SKUs through systematic MySQL queries and quality checks.
- Identified and resolved data gaps in product fitment tables using targeted SQL queries, improving catalog reliability.
- Automated database updates with MySQL procedures and triggers.

Education

Örebro University — **Örebro, Sweden**

Industrial Ph.D. in Computer Science — *Apr 2021 – Present*

Halmstad University — **Halmstad, Sweden**

Master of Science in Embedded and Intelligent Systems — *Aug 2018 – Sep 2020*

Visvesvaraya Technological University — **Mysuru, India**

Bachelor of Engineering in Electronics and Communications — *Jun 2012 – Aug 2016*

Projects

1. RAG-Driven Course Planning Chatbot

Örebro University — Örebro, Sweden

- Built a chatbot that helps professionals figure out which university courses match their career goals by searching through existing course materials and creating personalized learning paths.
- Used Python with **RAG** architecture and **LLM** (LLaMA-3) for natural language responses, combined with FAISS for vector search, to make course recommendations actually relevant

2. Master Thesis; Analyzing white blood cells using deep learning *2020*

Halmstad University — Halmstad, Sweden

- Trained CNNs (using Keras) for white blood cell classification and analysis that achieved 90-94% accuracy across multiple cell types.

Teaching

Örebro University — Örebro, Sweden

- Co-developed the neural networks course with Prof.Amy Loutfi and was responsible for the computer vision modules, such as semantic segmentation, image super-resolution, and transfer learning.

Publications

[1]: Neelakantan et al., *"Neural network approach for shape-based euhedral pyrite identification in X-ray CT data with adversarial unsupervised domain adaptation,"* Applied Computing and Geosciences, 2024.

[2]: Neelakantan et al., *"Machine Learning for Lithology Analysis using Multi-Modal Approach Integrating XRF and XCT data,"* Scandinavian Conference on AI, 2024.

[3]: Neelakantan et al., *"DR-SCAN: An Interpretable Dual-Branch Residual Spatial and Channel Attention Network for Remote Sensing and Geoscience Image Super-Resolution,"* ICLR ML4RS Workshop, 2025.

[4]: Neelakantan et al., *"A Human-Centered Approach to Image Super-Resolution using a Dual-Branch Architecture,"* Journal of Visual Communication and Image Representation, 2025 (Under Review).

[5]: Neelakantan et al., *"Domain-Aware Tabular Data Augmentation Using Large Language Models."*, AI for Tabular Data Workshop at Eurips 2025.