Bella Nicholson

Amsterdam, Netherlands | bellanich.github.io | bella-nicholson | bellanich | American

A resourceful and results-oriented Machine Learning Engineer (3+ years) with a proven track record of building, optimizing, and deploying production-ready ML solutions across diverse tech environments. A life-long learner who's well-versed in LLM inference and edge deployment. Excited about the intersection between software engineering and AI research.

EXPERIENCE

Machine Learning Engineer // Brenntag // Nov 2023 – Present — Amsterdam, Netherlands

At the world's leading chemical distributor, I deployed and maintained ML products across 70+ countries. Thus far, I've:

- Migrated a €30M+ annual revenue AI assistant to a **more cost-effective and secure AWS** platform, reducing operational costs
- Developed a **real-time notification system** to monitor critical ML jobs and model metrics, **improving system visibility** and reliability
- Standardized quality controls across 15+ ML project components through the creation of a CLI package prototype

Machine Learning Consultant // Deloitte // Sept 2021 – Oct 2023 — Amsterdam, Netherlands

As a contracted ML engineer, I optimized and implemented ML solutions for diverse clients, delivering:

- **Stabilized** a Dutch e-classified ads platform's "For You" **recommendation engine** (2000+ lines of code) with a 65% increase in test coverage
- Centralized tracking of **1000+ models** and associated experiments for a German steel conglomerate, improving **model reproducibility**
- Launched a self-paced, ML-focused coding training website to standardize and improve code quality across Deloitte NL

Machine Learning Research Intern // Crunchr // Jan 2020 – Aug 2020 — Amsterdam, Netherlands

At a people analytics platform, I conducted graph-based representation learning research for the development of ML products:

- Built a proof of concept **representation learning** process to encode relational database entities for **improved downstream ML performance**
- Demonstrated approach validity by applying deep neural networks to downstream classification tasks on process outputs

Computer Vision Intern // Cubelizer // June 2017 – July 2017 — Madrid, Spain

As part of a Google-backed edge computer vision startup, I improved customer detection by 12% for retail space price optimization:

- Developed a video stream-based **object detection** method in compliance with EU privacy regulations
- Applied image processing and classical machine learning techniques to low-resolution images

PROJECTS

Pocket Multi-Modal Large Language Model

- Deployed a **custom embedded, vision-text foundation model** and Google's Gemma 2B model on various **edge devices (laptop, phone, tablet)**
- Extended an open source LLM hardware-optimization framework to quantize and optimize a new multi-modal LLaVA foundation model
- Documented the project implementation, including application solution prototyping, in a detailed 4-part blog post series

Transformers Decoded: A Guide to Optimizing Large Language Models

- Developed a comprehensive study guide on Large Language Models (LLMs), explaining underlying concepts and modern optimization strategies
- Covered LLM inference **optimization techniques (speculative decoding, flash attention, continuous batching; etc.)** for efficient deployment

EDUCATION

Master of Science, Artificial Intelligence

University of Amsterdam | Cum laude (8.0/10.0) | Sept 2018 – Dec 2020 | Amsterdam, Netherlands

- Courses on AI, including Deep Learning, Computer Vision, Natural Language Processing, Information Retrieval, and Reinforcement Learning
- Thesis on "Interpretable Representation Learning for Relational Data" in collaboration with Crunchr

Bachelor of Science, Biomedical Engineering

The College of New Jersey | Magna cum laude (3.8/4.0) | Sept 2014 – May 2018 | Ewing, New Jersey, USA

SKILLS

Programming Languages & Tooling

Python, Git (2016-present), Bash (2018-present), Terraform (2023-present), SQL (2019-present), Docker (2022-present)

MLOps Platforms

Amazon Web Services (2021-present), Google Cloud Platform (2022-present), Databricks (2022-present)

ML Frameworks

PyTorch (2018-present), PySpark (2022-present), FastAPI (2021-present), Tensorflow (2021-2022), Keras (2022)

English 100% | Spanish 75% | German 60% | Russian 50%