John Doe

Address \diamond City, Country

EDUCATION

August 2020 - June 2025 School

Master of Science in Engineering, Something

City, Country

· Specialization in Image Analysis and Machine Intelligence.

• Grades: 4.74/5.00.

Seconf School February 2024 - August 2024 Exchange Studies City, Country

· Courses in: Advanced Probability Theory, Computer Vision, Modern NLP, Reinforcement Learning.

· Grades: 4.74/5.00.

EXPERIENCE

August 2022 - Present Company

Student Test Engineer (Part-Time)

City, Country

- · Conducted comprehensive testing of network speaker firmware and software, pinpointing critical defects and verifying new features.
- · Utilized PuTTY, Wireshark, and Postman to inspect logs, analyze network traffic, and debug complex issues in real time.
- · Created and managed bug reports in **Jira**, collaborating closely with developers to expedite critical fixes.
- · Contributed to **test automation** efforts in **Python** for Windows-based applications, for regression testing.
- · Developed productive relationships with **developers** and **product managers** to streamline testing processes.
- · Mentored new testers by sharing best practices, troubleshooting methodologies, and QA strategies to maintain high software quality.

PROJECTS

Bird Song Classification Using Spectral Analysis and CNNs

- · Led a machine learning project to classify bird species from audio recordings, achieving a 96.31% accuracy in identifying three common bird species using advanced AI techniques.
- · Automated data acquisition by developing a Python script that interfaced with the Xeno-canto API, streamlining the retrieval of extensive bird audio datasets.
- · Implemented signal processing and spectral analysis in MATLAB to generate high-quality spectrograms and developed an algorithm for automated syllable detection, enhancing data quality and processing efficiency.
- · Enhanced spectrogram data reliability by applying image processing, data augmentation, and feature extraction techniques in Python, optimizing inputs for convolutional neural network training.
- · Designed and optimized multiple convolutional neural network (CNN) architectures using the Keras library in **Python refining models** to accurately classify spectrograms and selecting the best-performing model.

EPFLLaMA: A Lightweight LLM Finetuned on EPFL Curriculum

- · Led development of EPFLLaMA, a specialized language model for STEM education.
- · Managed the entire dataset creation process, including data scraping, cleaning, and annotation.
- · Implemented advanced fine-tuning techniques including Supervised Fine-Tuning (SFT) and Direct Preference Optimization (**DPO**) to enhance model performance and reduce bias.
- · Applied Parameter-Efficient Fine-Tuning (**PEFT**) methods, specifically Low-Rank Adaptation (**LoRA**).
- · Developed a specialized model for Multiple-Choice Question Answering, improving accuracy by 100% compared to baseline models in STEM-related tasks.
- · Implemented quantization techniques, reducing model size by 50% while maintaining performance, demonstrating skills in model optimization for practical applications.

· Leveraged **Python** and **PyTorch** along with specialized libraries like **Transformers**, **TRL**, and **Unsloth** for model development, training, and optimization.

Parallel n-step Advantage Actor-Critic 🗷

- · Implemented a scalable Advantage Actor-Critic (A2C) algorithm using **PyTorch**, achieving optimal policy convergence for both discrete and continuous control tasks.
- · Engineered **parallel training** architecture with multiple workers and n-step returns, resulting in **4x faster training** through innovative **batch processing**.
- · Developed sophisticated reward handling with stochastic rewards and **reinforcement learning** advantage estimation, demonstrating deep understanding of RL foundations.
- · Built comprehensive visualization pipelines using **Matplotlib** and **Gymnasium** to track value functions and enable data-driven hyperparameter optimization.
- · Achieved 100% success rate in CartPole while reducing training time from minutes to seconds through effective parallelization.

SKILLS

Programming languages Java, MATLAB, Python, MySQL, C

Machine Learning PyTorch, Keras, Transformers, TRL, Unsloth, NumPy, SciPy

Version Control Git

Languages Swedish, English, Arabic