

# Jack Duck

🧠 AI Engineer

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**AI engineer** with a mathematics background, shipping models to production and keeping inference lean.

- Builds RAG and vision systems end to end (data, evaluation, serving).
- Optimizes GPUs/CPUs with quantization, batching, and observability.
- Turns research ideas into API-ready features with clear guardrails.

"Turning complex data into actionable signals."



## Skills & Languages

### Core AI/ML

Python (NumPy, Pandas, Scikit-learn)

Deep Learning (PyTorch, TensorFlow)

NLP (Transformers, SpaCy, NLTK)

Computer Vision (OpenCV, YOLO)

Vector Databases (Pinecone, ChromaDB)

LLM Frameworks (LangChain, LlamaIndex)

### MLOps & Tools

Docker & Kubernetes

AWS (SageMaker, S3, EC2)

Model Serving (FastAPI, TorchServe)

Git & DVC (Data Version Control)

SQL & NoSQL

Linux Environment

### Languages

🇬🇧 English (C1)

🇩🇪 German (B1)



## Professional Experience

### Machine Learning Engineer (DeepQuack AI Labs)

10.2023 - Present

- Fine-tuning LLaMA-2 and Mistral models for domain-specific medical inquiries, improving response accuracy by 45%.
- Building Retrieval-Augmented Generation (RAG) pipelines using LangChain and Pinecone vector databases.
- Deploying ML models to production using Docker and AWS SageMaker, optimizing inference latency by 40%.
- Collaborating with data teams to clean and preprocess terabytes of unstructured text data.

### Python Developer (WebPond Automations)

09.2021 - 09.2023

- Developed robust data scraping pipelines using Scrapy and Selenium to aggregate market data for analysis.
- Built RESTful APIs using Flask to serve legacy statistical models to frontend applications.
- Automated daily reporting tasks using Python scripting, reducing manual workload by 15 hours per week.
- Introduced type hinting (Mypy) and unit testing (Pytest) to the legacy codebase.



## Side Projects

### QuackGPT

A local chatbot interface capable of analyzing PDF documents offline, utilizing quantized models for CPU inference.

*Technologies: PyTorch, HuggingFace Transformers, Streamlit, ChromaDB, Quantization (GGUF)*  
*Link: [github.com/jackduckdev/quack-gpt](https://github.com/jackduckdev/quack-gpt)*

### Migratory Flow Predictor

Time-series forecasting model to predict seasonal bird migration patterns based on historical weather data.

*Technologies: TensorFlow, Pandas, Scikit-Learn, Matplotlib, ARIMA*



## Education

**Applied Physics & Complex Systems** (Master of Science)

10.2022 - 07.2023

Quackow University of Technology

**Applied Mathematics** (Bachelor of Science)

10.2017 - 06.2021

Mallard Polytechnic