

NICOLAS FORSTNER

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BASED IN: London

EDUCATION

2018-2022	UNIVERSITY OF YORK (RUSSEL GROUP) <i>MEng (Hons) Computer Science with Artificial Intelligence</i> <ul style="list-style-type: none">• Recipient of the IET Prize for the most outstanding student of my year.• First class honors with firsts in all four years of the degree. Transcript available on nforstner.com/transcript.pdf.• Third year thesis on object tracking using conventional video and optical flow.
	SCHOOL 2017 <i>German (Bavarian) Abitur with a grade average of 1.6 (1 is best, 6 is worst)</i>

WORK EXPERIENCE

JUNE & JULY 2022	UNIVERSITY OF YORK <i>Research support assistant - Telemedicine with AI for COVID-19 patients</i> <ul style="list-style-type: none">• Analysed and consolidated the team's research towards using AI to diagnose COVID-19 infections to prepare them for publication in journals such as PLOS.• Developed integrations for AI models to facilitate their internal usage.
JULY & AUGUST 2020	ATOS <i>Intern - Consulting for data science and artificial intelligence</i> <ul style="list-style-type: none">• Contributed to a project for the German military (BWI) involving the detection of humans through walls using radio signals.• Trained a cross-modal teacher-student model and developed a complex data pipeline to process sensor data.• Presented the team's work to customers and managed further communication as part of our SCRUM cycle.
SEPTEMBER 2019	ATOS <i>Intern - Consulting for data science and artificial intelligence</i> <ul style="list-style-type: none">• Developed software that uses machine learning to improve the efficiency of a production line for electrical parts in a Siemens factory.• By making heavy use of data preprocessing and hyper-parameter optimization, my approach was able to beat all alternatives and was chosen to be deployed into production.
AUGUST & SEPTEMBER 2018	PADBERG & PARTNERS <i>Internship - Web development and task automation</i> <ul style="list-style-type: none">• Contributed to the development of open-source marketing platform <i>Mautics</i>.• Automated migrations from proprietary software to open-source alternatives.

SKILLS

GENERAL	Strong passion for deep learning with excellent engineering abilities. Proven communication skills and exceptional ability to explain and teach.
AI	Transformers, Denoising Diffusion, Generative AI, implementation and debugging of custom model architectures and training loops, training on HPC clusters. PyTorch, Jax, DeepMind-Haiku, Hugging Face ecosystem, W&B
LANGUAGES	Python, Rust, JavaScript, LaTeX, some C and CUDA
OTHER	Linux, Git, GitHub, Docker, Slurm, Google Cloud, AWS, NeoVim, web development with e.g. Flask and VueJs
ENGLISH	Excellent
GERMAN	Native

SELECTED PROJECTS

MINIGPT	A minimal re-implementation of OpenAI's GPT language model in Jax with DeepMind-Haiku. Features include: Telemetry logging to W&B , multi-GPU training automatic mixed precision, gradient checkpointing, architectural improvements such as Rotary positional embeddings, pre-norm transformer blocks and SwiGLU activations. GitHub .
KIGO	A diffusion model to generate images. Features include (in addition to those above): DDIM sampling with impressive results after only 16 sampling steps, utilities for training on Slurm clusters, complete U-Net architecture implemented from scratch. GitHub .
TIMBER	A small programming language , consisting of a tokenizer, parser, code generator and a stack-based virtual machine. Includes functions, loops, conditionals, pointers and basic I/O. Check out this Hello World program written in Timber! GitHub .