

## EXPERIENCE

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- **Merantix Momentum** Berlin, Germany  
*Machine Learning Engineer* April 2022 - Present
  - **RAG with LLM**: I developed the backend for a **retrieval augmented generation** application that included a vector database, **LLM** prompt engineering for generation, and experimentation on improving the semantic search using reranking and query expansion methods.
  - **Legal AI**: To help lawyers in the validation process of NDAs, I developed and deployed a classifier for identifying relevant parts of NDAs based on **sentence transformers**.
  - **Document AI**: I experimented with various Document AI models such as **LayoutLM** or **Donut** for finding a viable internal solution for doing ML on PDFs
  - **MLOps**: For deploying ML solutions, I use Terraform, Kubernetes, Docker and GCP. The ML part is most often embedded into a Fast API backend and packaged into Kubernetes Pods.
- **P3** Stuttgart, Germany  
*Data Scientist (WS)* June 2021 - Sep 2021
  - **Semantic Search**: To improve the search results of a public tender platform. I integrated a semantic search functionality into an existing web application. I further performed unsupervised finetuning of the sentence embeddings to domain-specific language of tenders using DeCLUTR
- **Ubiquitous Knowledge Processing Lab** Darmstadt, Germany  
*Research Assistant* Oct 2019 to May 2020
  - **Language Model Benchmarking**: UKP is a world-class research lab known for their work on sentence transformer or Adapters. The project I worked at had the goal to identify Pro and Contra arguments inside a large document corpus. I benchmarked models to find the optimal trade-off between performance and resource-efficiency.
- **Squirrel-core** Berlin, Germany  
*Open Source Contributor* April 2022 - Present
  - **Python**: Squirrel-core is a **dataloading library** optimized for deep learning and machine learning over **cloud storage**. It's main perks include efficient storage access via sharding, parallel loading and streaming. I am one of the two main maintainer of the library, resolving issues, crafting RFCs, and implementing new features.

## EDUCATION

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- **Technical University Darmstadt** Darmstadt, Germany  
*Master of Science in Autonomous Systems; Grade 1.2 (best: 1.0)* Oct. 2018 – Jan. 2022
  - **Master Thesis**: Our study improved **reinforcement learning** by combining the Score Function (SF) estimator and the measure-valued derivative (MVD) for gradient estimation. While the SF is common but has high variance, the MVD reduces variance but works only in singular dimensions. Our novel estimator merges these methods, significantly lowering variance (up to 50%) compared to using only SF, within the same sample budget.
- **University Stuttgart** Stuttgart, Germany  
*Bachelor of Engineering in Engineering Cybernetics.* Oct. 2013 – May. 2017

## PROJECTS

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- **Reimplementation Of Neural Radiance Fields**: A Jax reimplementation of the original **NERF** paper
- **Implementation of Merkle Tree**: A Rust implementation of Merkle Trees.

## PROGRAMMING SKILLS

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- **Languages**: Python, Rust, C++
- **Technologies**: GCP, Kubernetes, Docker, PyTorch, Jax

## AWARDS

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- **Recipient of the Deutschlandstipendium**: The Deutschlandstipendium is scholarship partially provided by the German government for high-achieving students.