Alexander Krauck, MSc

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Professional Summary

- **Technical Expertise**: Extensive experience in AI and software engineering, with strong focus on machine learning, neural networks, and practical implementations. Proficient in modern ML frameworks and cloud technologies including PyTorch, TensorFlow, OpenAI APIs, Huggingface (minor contributor to transformers), GraphRAG, AWS, Firebase, Kubernetes and Docker.
- **Full-Stack Development**: Comprehensive experience across the technology stack, from React Native mobile development to cloud infrastructure with Firebase and AWS. Strong foundation in software engineering principles with expertise in Python, SQL, Java, JS, Kotlin, C#, and various other programming languages.
- **Research and Innovation**: Successfully implemented novel architectures in graph transformers and graph neural networks, particularly in drug discovery. Demonstrated ability to bridge theoretical research with practical applications through containerized deployment and cloud infrastructure.
- **Leadership and Execution**: Led end-to-end ML processes from conceptualization to production, including data preprocessing, model architecture design, and deployment. Currently developing a startup side project utilizing Firebase stack and React Native, showcasing practical entrepreneurial experience (See https://omnipate.com).

Experience

- **Fabasoft** — Linz, Austria
  Head of Competence Center AI — *April 2024 - Present*
  - **Responsibilities**: As the Head of Competence Center AI I am responsible for developing our internal AIOps process that goes from conceptualization, planning, evaluating, productizing and deploying state of the art AI-Use-Cases in areas like Classification, LLMs and RAG. The AIOps process is sucessfully being utilized by all business units of Fabasoft. Moreover, I am in charge of guiding our AI strategy in cooperation with Fabasoft's upper management and our CEO. Finally I also coach and support Marketing, Sales and Professional Services to understand the many opportunities but also the important limitations of AI.
  - **Special Achievement**: Because of my dedicated effort, Fabasoft went from having no AI-Use-Cases to having multiple productive and sold AI-Use-Cases that can scale to all customers and the AIOps process ensures that they can produce more of them in a self-sustained manner.
- **Startup Side Project - Omnipate** — Remote
  Founder & Lead Developer — *2024 - Present*
  - **Technical Stack**: Developing a full-stack application using React Native, Firebase, and modern AI technologies including GraphRAG in a scalable manner.
- **Johannes Kepler University Linz (JKU)** — Linz, Austria
  Studies in Artificial Intelligence — *October 2019 - September 2024*
  - **Artificial Intelligence (AI)**: I graduated the Master's and Bachelor's degree program of AI with distinction. I wrote my Master's thesis in cooperation with Voestapline AG. My thesis was centered around uncertainty estimation using machine learning in the field of regression (see [Krauck, 2024]).
    My AI studies center around cutting-edge machine learning techniques and neural network architectures, including GPT, LLMs, BERT, LSTM, Graph Neural Networks and most recently uncertainty estimation. This academic journey has equipped me with a robust theoretical foundation, enhancing my skills in scientific writing and evidence-based conclusion forming.
  - **Special Achievements**: Winning the 3rd academic place in the international ACM RecSys Challenge 2021 (see [Krauck et al., 2021]).
- **Institute of Machine Learning JKU** — Linz, Austria
  Student Researcher — *Summer 2021 - Present*
  - **Scientific work on novel graph neural networks (GNNs)**: Conducted basic research on novel GNNs applicable in the domain of drug discovery and other fields in Prof. Sepp Hochreiters's machine learning institute in the JKU. This work's goal is to improve current GNN architectures and to make GNNs more expressive. Collaborated with major researchers of the institute[1].

[1] e.g. Andreas Mayr, Günter Klambauer

- **Further assisting the Institute**: Collaborated in drafting a scientific proposal to the FWF[2], to grant the best artificial intelligence researchers in Austria major funds of approximately 70 million € under the research director Sepp Hochreiter.
- **Bachelor's Thesis in the novel area of Graph Transformers**: My thesis aims to investigate pre-training methods within the emerging domain of graph transformers, with a particular emphasis on molecular graph data for biological and physical property predictions. Moreover, in the course of this work I contributed to the Huggingface community by improving the source code.

- **Pre-Artificial Intelligence Software Engineering Experience** Linz, Austria
  Software Engineer
  - **Backend Java Developer - 2019 at OPTA-DATA**[3]: Developed a Java backend for a mobile app catering to taxi navigation, logistics, and routing. Thereby used Java Spring framework, docker, software test automation.
  - **Internship as software engineer - 2017 at Dr. Steffan Datentechnik**: Completed a C# application focused on client management and I also developed an android application for controlling dummy vehicles for car safety tests.
  - **5 year IT specialized school - 2012-2018 in HTBLA Leonding**: In this IT specialized school I developed strong fundamentals in software engineering. This long term experience enables me to adapt to any programming environment fast with clean code capabilities.

Personal Interests

- **Innovation in AI**: Actively engaged in staying current with AI advancements, particularly in areas of large language models, neural architectures, and their practical applications. Passionate about combining theoretical research with practical implementation to drive meaningful progress in the field.
- **Intellectual Discourse**: Deeply driven by engaging in high-level technical discussions about ambitious topics in AI and computer science. I thrive in environments where I can exchange complex ideas with other passionate technologists, particularly about pushing the boundaries of what's possible in machine learning and software engineering.

References

A. Krauck. A new perspective on uncertainty techniques in regression. Master's thesis, Johannes Kepler University Linz, Linz, Austria, 2024. URL https://epub.jku.at/obvulihs/content/titleinfo/10001240.

A. Krauck, D. Penz, and M. Schedl. Team JKU-AIWarriors in the ACM Recommender Systems Challenge 2021: Lightweight XGboost Recommendation Approach Leveraging User Features. In *RecSysChallenge '21: Proceedings of the Recommender Systems Challenge 2021*, RecSysChallenge 2021, page 39–43, New York, NY, USA, 2021. Association for Computing Machinery. ISBN 9781450386937. doi: 10.1145/3487572.3487874. URL https://doi.org/10.1145/3487572.3487874.

[2]https://www.fwf.ac.at/en/
[3]https://www.optadata.at/