

Alexander Kreuzer, PhD | Senior Data Scientist

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TECHNICAL SKILLS

Machine learning | Natural language processing | Statistics | Python | Scala | Go | ReasonML | SQL | Pandas | scikit-learn | matplotlib | TensorFlow | PyTorch | spaCy | HuggingFace | PostgreSQL | MongoDB | Neo4j | Spark | AWS (including Sagemaker, Athena, Lambda, S3) | Google Cloud Platform

EXPERIENCE

Senior Data Scientist

Apr 2019 — present

SAP – Innovation Center Network

Newport Beach, CA

- Orchestrated and led the project resurgence for SAP SuccessFactors' job search tool by hiring a junior data scientist to build out a knowledge graph and improve the job search tool's function; resulting in its current state living within several SAP customer sites as well as the SAP main careers website portal.
- Developed a code suggestion tool that helps to migrate source code from SAP R/3 to S/4HANA. This uses a GNN on the abstract syntax tree of the ABAP statements. Led two developers in this project.
- Developed a prototype that uses formal methods to check for regression when updating legacy ABAP code. This utilizes the solver Z3. Hired and led one developer for this project.
- Appointed by leadership for the technical lead position in the SAP HeroX AI challenge. The task of the challenge was to develop an algorithm to anonymize scanned invoices. This challenge was announced at TechCrunch 2019, see herox.com/SAPAI.
- Formalized a privacy compliance checker for SAP Data Intelligence, a tool to analyze and transform data by building a command line tool and working in alignment with the user interface team to integrate the tool into the system.
- Wrote position papers in the internal SAP Tech-Radar on Explainable AI, Probabilistic Computing, and AI for Software Engineering for the purpose of finding internal stakeholders interested in these technologies for continued overall business growth.
- Mentored four junior data scientists in both the internal data science team and adjacent teams.

Research Scientist

Jan 2018 — Mar 2019

Perseus Technologies GmbH

Berlin, Germany

Perseus is a start-up founded by a big reinsurance company to extend the cyber-security insurance market to small enterprises.

- Formulated a data-collection strategy alongside a cybersecurity expert for underwriting cyber-security insurance for small enterprises, resulting in the scalability and automation of a typically cost-prohibitive effort for small businesses.
- Implemented the data collection in the Scala backend by programming a second data store for all interaction data.

Senior Developer for Artificial Intelligence

Aug 2016 — Dec 2017

Cognotekt GmbH

Cologne, Germany

- Developed the system to automate car insurance claims by considering the reference calculation provided by car manufacturers.
- Built a taxonomy of car parts with a linguist, creating an ML-model that classifies items according to the taxonomy, and ran a comparison algorithm between reference invoices and claims, resulting in the creation of Cognotekt's showcase technology to pitch potential customers and automating 100,000 claims per year with considerably less time and labor.
- Automated a machine learning model, splitting PDFs according to content (e.g., scanned driver's licenses, applications forms) to improve upon the previous state of the company's digitizing process.

Research fellow

Mar 2014 — Jul 2016

National University of Singapore – Mathematics Department

Singapore

- Taught a graduate course on mathematical logic, course containing Propositional Logic, First Order Logic, Natural Deduction, Logic Programming, Model Theory and Incompleteness.

Postdoctoral Researcher

Oct 2012 — Feb 2014

École Normale Supérieure de Lyon, Computer Science Laboratories

Lyon, France

EDUCATION

Ph.D. in mathematical logic, Technical University of Darmstadt, Germany, passed with distinction

Feb 2009 — Apr 2012

Thesis: "Proof mining and combinatorics: Program extraction for Ramsey's theorem for pairs."

– The thesis was awarded with an invitation to the PhD colloquium of the German Association for Mathematical Logic (DVMLG).

Diploma, Mathematics, Technical University of Darmstadt, Germany, passed with distinction

Oct 2003 — Feb 2009

PUBLICATIONS

In total **14 publications** in mathematical logic and theoretical computer science journals. Complete list at aleph.one/matkaps.

1. Kreuzer A., Measure theory and higher order arithmetic, *Proceedings of the American Mathematical Society* (2015). [Published Link](#)
2. Kreuzer A. and Yokoyama K., On principles between Σ_1 - and Σ_2 -induction, and monotone enumerations, *Journal of Mathematical Logic* (2016). [Published Link](#)
3. Kreuzer A., Bounded variation and the strength of Helly's selection theorem, *Logical methods in Computer Science* (2014). [Published Link](#)

CONTRIBUTIONS TO OPEN SOURCE PROJECTS

- Fixing Java Generic API for Microsoft’s Z3 prover [Github](#) | Live
- Adding ScalaJS support to Typelevel’s case-insensitive string [Github](#) | Live
- Adding support for Azure Queue Storage to Lightbend’s Alpakka project [Github](#) | Live