

Till Breuer

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Mathematician. Data Scientist. Software Developer.

Data Scientist with a math diploma from University of Münster and a background in **machine learning**, **software development** and **statistical modelling**.

📖 EDUCATION

10/2004 - 06/2010

University of MünsterDiploma in Mathematics / Probability Theory \varnothing 1.2

Thesis (1.3): »Zur Rekurrenz von Random Walks«

10/2001 - 10/2004

Berufsakademie MannheimDiploma in Information Technology (BA) \varnothing 1.5

Thesis (1.4): »Entwurf einer Architektur zur Publikation von Unternehmensverzeichnissen im Intranet«

1991 - 2000

Gymnasium Am Geroweier, MönchengladbachAbitur \varnothing 1.4

🕒 EXPERIENCE

Freelance

Self-employed

8/2019 - present

Data Scientist**Projects**

As a freelancer I have been mainly been working on algorithmic challenges in computer vision and natural language processing. My responsibilities comprised concepts, R&D and implementation as well as project coordination tasks. Projects I worked on included:

- Swipe-based recommendation app based on content-based image retrieval and a bandit algorithm
- Giving workshops and teaching concepts of deep learning for computer vision
- Text-based categorisation of marketing texts
- Text-based matchmaking
- Hybrid image semantic segmentation and pose detection in street scenes
- Implementation of a literature management system with ELK-stack integration
- NLP- and recommendation-based matchmaking
- Evaluation of deep learning-models designed for autonomous driving
- Design and implementation of a recommendation micro-service for personalisation of a news-site
- Time series forecasts for demand prediction in logistics

Technology stack

- Python
- scikit-learn
- PyTorch
- matplotlib, altair
- Keras + Tensorflow
- Elasticsearch
- Postgres
- GCloud- and AWS-services
- JavaScript, AngularJS

mediaire GmbH

AI-software for radiologists

2/2020 - 10/2021

Senior Data Scientist

At mediaire I was responsible for benchmarking and adapting segmentation and classification models for MRI images as well as for integrating them into the software.

Responsibilities & Achievements

- Developing prototypes for segmenting and classifying MRI-images
- Evaluating and benchmarking state-of-the-art solutions for medical image analysis
- Development and improvement of Deep Learning-models

Twenty Billion Neurons GmbH

Realtime video understanding

6/2017 - 8/2019

A.I. Engineer / Senior A.I. Engineer

At Twenty Billion Neurons I worked as a research and development engineer, creating artificial neural networks which detect activities in videos. I participated in developing solutions for spatial and temporal activity detection using deep neural networks and applied the technology in a series of customer projects.

Responsibilities & Achievements

- Developing solutions for spatial detection performed in real-time on videos
- Developing solutions for accurate temporal predictions and prediction of trigger points in videos
- Realization of customer projects
- Mentoring tasks

The unbelievable Machine Company GmbH

Cloud Service Provider and Full Service Provider for Data Solutions

11/2014 - 6/2017

Data Scientist

At the unbelievable Machine Company I worked on a variety of Data Science projects. These include industry projects as well as e-commerce and media-related projects. Among others I worked on

- Computer Vision: Image recognition using neural networks
- Recommendation: Collaborative filtering, content-based recommendations, statistical and bandit approaches
- Predictive maintenance: Predicting malfunction of manufacturing components and classifying errors
- Performance prediction: Predicting distribution of user participation among different channels
- Prediction of energy consumption
- Various clustering / segmentation tasks

Responsibilities & Achievements

- Leading role in most projects
- Customer communication
- Contributing to the improvement of internal processes
- Introducing best practices for coding
- Speaker at several conferences including the bitkom Big Data Summit

bitcrowd GmbH

Web Development Consultancy

8/2014 - 10/2014

Freelance Software Developer

After Krautreporter was crowdfunded I helped developing the platform as leading backend and Javascript engineer. I was responsible for the technical concepts of the platform as well as for implementing the Rails backend, the AngularJS components and making the components work together. The platform had a tight deadline and launched on time.

Responsibilities & Achievements

- Backend and client-side development
- Choices of technology (web content editor for publishing articles)
- Technical concepts

finn GmbH / openproject

Software Development Consultancy

10/2013 - 8/2014

Software Developer

Finnlabs is a Berlin-based company centered around their product, an open source project collaboration software called OpenProject. I joined the company as a senior software developer.

Responsibilities & Achievements

- Backend development (Ruby on Rails)
- Working in an international team
- Requirements engineering and sprint planning
- Team coordination and leading the Javascript / AngularJS development

Zweitag GmbH

Ruby on Rails Consultancy

6/2010 - 10/2013

Software Developer

As a software engineer I worked on a variety of projects, for example so-schmeckts.de or compeon.de. Technologies we worked with involved **Rails** as server-side technology as well as **JavaScript** and related frameworks like **AngularJS** on the client-side. Zweitag applies behaviour driven development using **Rspec**, **Capybara** and **Jasmine**. Data visualization were done with **D3.js** among others.

Responsibilities & Achievements

- Backend and client-side development
- Technical concepts
- Customer communication
- Project coordination

Institute of Mathematical Statistics

of the University of Münster

8/2010 - 10/2011

Research assistant

As a research assistant at the institute for probability theory at the University of Münster I was mentor for seminars in probability theory and statistical modelling. Besides I lead the internship for applied statistics with R. I did research in the field of renewal theory exploring structural inheritance properties of Markov renewal processes. Meanwhile I worked as a software developer at Zweitag GmbH (see above).

Fairix

Startup

10/2008 - 3/2010

Software developer, CTO

Fairix is a startup I took part in as a software engineer while I was a student of mathematics. Fairix provided a platform to producers and merchants enabling them to offer products with additional ecological or social value, e.g. fair trade products. In an engineering team of two we developed a marketplace platform with Ruby on Rails. For that purpose I learnt Rails from scratch and I was leading the development in the later course of the project when the platform launched. The startup finally ran out of funds after two years.

**Bundesamt für Sicherheit
in der Informationstechnik**
(BSI)

8/2007 - 9/2007

Research engineer (Pattern recognition)

At my internship at the BSI I worked on research topics about malware classification. The internship lasted two months and together with my mentor I implemented a pattern recognition and a clustering approach to identify and distinguish malware by the kinds of exploits it used. The software had to be extremely performant and of linear complexity and was written in C.

**Institute of Mathematical
Statistics**

of the University of Münster

10/2006 - 3/2008

Tutor in linear algebra / functional analysis

Tutorials and correction of student homework.

 **INTERESTS**

- Music (listening and playing instruments)
- Mathematics, Physics, Computer Science, Biology
- Sports
- Reading
- Studying
- Code design

 **REFERENCES**

Klaas Bollhöfer, former Lead Data Scientist at the unbelievable Machine Company GmbH (<http://www.unbelievable-machine.com>)
was my boss at the unbelievable Machine Company in Berlin.

Christoph Beck, Founder at bitcrowd GmbH (<http://bitcrowd.net/#team>)
was my boss during the development of Krautreporter.

Prof. Dr. Gerold Alsmeyer (<http://wwwmath.uni-muenster.de/statistik/alsmeyer/>)
supervised my diploma thesis at University of Münster.