Adrian Eisenmeier

Profile

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Personel data

Name	Dipl.-Phys. Adrian Eisenmeier
Day of birth	1985.06.13
Nationality	German
Language skills	German (native), English (fluent), Dutch (beginner)
Programming languages	Python, R, C# , C++, Java Script
Skills	Various methods of Machine Learning, Neural Networks with Keras/Tensorflow and Data Science Frameworks (Jupyter Lab, Scikit-Learn, H2O, pyramid Auto-ARMIA, SciPy, ML.NET, etc.), image processing OpenCV, SkiaSharp, Knime, R Shiny, Grafana Dashboards, Linux Server Administration, Docker, Kubernetes, Apache Impala Hadoop, Apache Kafka, Xamarin Forms, Xamarin.Android, Xamarin.iOS, Xamarin.UWP, ASP.NET Core, Entity Framework Core, Identity Core, Penetration testing and IT Security (Kali, Tails Linux, Metasploit Framework, NMap, etc.), Bluetooth, agile development, test driven development, Scrum, Redmine, Jira, Mantis, Confluence, Doxygen LaTeX, Azure Cloud Ressources (TSI, Functions FaaS, SQL, Cosmos DB), AWS Cloud (EC2, ECS, S3, Lambdas) GitLab, Subversion, REST API's, Swagger, automated deployment processes with Continuous Integration (CI), Reverse Proxys with Caddy, Nginx, Apache, SSL certificates with Let's Encrypt

Education

2007 – 2016 **Academic studies: Physics, Meteorology, Chemistry**,
Albert-Ludwigs-University of Freiburg, Germany.
Degree: Diploma Physicist

Job experience

2011 **Scientific Assistant**, *Pharmacy industry*, Freiburg, Germany.

- Technologies: R, Knime
- Analysis of synergistic effects in mixtures of various cancer drugs
- Implementation of Chou Combination Index (CI) in R as Knime Node

2011 **Scientific Assistant**, *Optics industry*, Freiburg, Germany.

- Technologies: Mathematica, Python
- Development of a software to determine the astigmatism and the focal length of eye lenses using machine learning. Implementation of the patent specification (2814916) of the Rodenstock company
- Aspheric lense approximation by use of cubic B-splines
- Estimation of metric tensors and numerical solutions of the curvature differential equations

2012 – 2015 **Scientific Assistant**, *Institute of Physical Chemistry*, Albert-Ludwigs-University of Freiburg, Germany.

- Technologies: TurboMol, ORCA, Gromacs MD
- QM/MM simulations of ESR parameters (g-tensor, hyperfine coupling tensor) for flavo-proteins, solved in an aqueous environment

2016 **Scientific Assistant**, *Institute of Physics*, Albert-Ludwigs-University of Freiburg, Germany.

- Technologies: C++, CUDA, Python, R
- Development and analysis of various recurrent neural networks for pattern matching
- Unsupervised learning:
  - Pattern recognition with Boltzmann nets
  - Pattern recognition with LSTM nets
  - Pattern recognition with Hopfield nets and analysis of the recognition rate
    - by use of different learning rules (Hebbian, Oya, STDP)
    - by use of different activations (linear, heavyside, sigmoid)
    - by use of different encodings of the neural activity
    - by use of energy optimization criteria
    - by use of algebraic relations of neural activities to each other
  - Comparison of classical Kohonen maps with game theoretical Kohonen maps
- Supervised learning:
  - Trained neural networks for baseline corrections in magnetic resonance spectra

2015 – 2017 **System Administrator**, *IT group for the Institute of Physics*, Albert-Ludwigs-University of Freiburg, Germany.

- Setup and maintenance of Linux and Windows images with ESXI and XEN. Configuration of dhcp, and cups server, configuration of NFS data storage, LDAP authentifications, KISS-systems, USV-configurations, FOG-cloud backups

- Development of an automatized penetration testing system for the IT network at the Insitute of Physics.

  Cron job controlled vulnerability scans with NMap script engine. Development of a plugin that downloads exploits from the Rapid 7 database, based on matching CVE entries returned by NMap. Use of Metasploit Framework (MSF) for trying to do attacks, based on NMap results, and by use of downloaded exploits, in case that they are not part of MSF Core.

2017 – 2021 **Data Science and Software Development**, *Dr. Hornecker Softwareentwicklung und IT Dienstleistungen*, Freiburg, Germany.

- **Printing industry (B2B)**: May 2019 - January 2021

  Role: Project Manager, Data Scientist, Software Developer

  Technologies: Xamarin Forms, Camera2, Entity Framework Core, OpenCV, SkiaSharp, Pillow, Docker, REST, Flask API

  Lead role in the development of a cross-platform mobile app for fraud detection, as well as for the calculation of a robust fingerprint, within the scope of a patented process for security ettiquetes. Investigation, evaluation and implementation of image processing methods such as SIFT, SURF, ORB. Implementation of Laplace and Fourier transforms, as well as signal-to-noise analyses. Planning and execution of the CI deployment process. Connection to the cloud via a Flask REST API. Implementation of a heartbeat service for the Flask controllers, as well as a response system in case of failures.

- **Energy industry (B2C)**: February 2020 - June 2020

  Role: Data Scientist

  Technologies: Azure Services (TSI, SQL DB, CosmosDB, Functions), various timeseries and data science frameworks (Auto-ARIMA, Scikit-Learn, Tensorflow and Keras)

  Data Scientist, Forcast of used electrical consumption, based on historical data and the actual weather prediction. Investigation of the contribution of meteoroloical parameters (temperature, cloud cover, precipitation probability, etc.) and comparison of different forcasting methods (ARIMA, Random Forests, LSTM Neural Networks) in terms of calculational costs, planning qualities, and accuracies (mase, nmae, nrmse). Reading and writing data with Azure services, and implementing the predictive model with Azure functions (FaaS) in Python. Implementation of a daily validation logic for the reporting. With the help of this implementation, the customer received value from the data, analyzed by machine learning, for future forecasts. The provision of the data as well as the processing is realized via various Azure services in an Azure cloud infrastructure. Documentation written with Confluence.

- **eCommerce (B2B)**: September 2019 - January 2020

  Role: Project Manager, Data Scientist, Software Developer

  Technologies: Docker, MySQL, .NET Core, Swagger, R Shiny dashboard, ShinyProxy, Caddy

  Lead role in the development of a full dockerzied system to upload data of online market shops into a database, and visualize them. Upload API with ASP .NET Core implemented, and with Swagger documentated. Dashboard implemented with R Shiny. Implementation of a secure passwordless access by use of Json Web Tokens (JWT), reverse proxy with Caddy.

- **Telecommunication industry (B2C)**: May 2018 - June 2019

  Role: Data Scientist, Software Developer

  Technologies: Knime, Impala Hadoop, Docker, R Shiny, ShinyProxy, Random Forests with Scikit-Learn, Neural Networks with Tensorflow

  Data Scientist, Elaborating of complex business processes with the responsible group leaders to get a mapping from the processes to the corresponding data in the hadoop cluster. Implementing a R logic to calculate KPI's and development of a Shiny dashboard for controllable visualizations of the KPI's. Implementation of a data interface to give the controlling group access to the data.

  Big Data, for the defined KPI's all phone calls between customer and service, out of last 4 years, were analysed by the use of methods from language processing (NLP), to understand the reasons for complaints and disturbances.

  Development of a predictive model to forcast individual working times of telecommunication techniquans in the field, based on historical data. This required the analysis of customer-specific developments by using machine learning and statistical models with the aim of improving customer acquisition and customer retention in the B2C area.

  Setup of a compliance conform server for production. Implementation of a release pipeline (Continuous Integration CI), that orchestrates docker containers for data access, model prediction, data transfer, and validation . Implementation of a daily reporting logic and visualization of planning qualities and accuracies.

- **IoT industry (B2C)**: April 2017 - May 2018

  Role: Software Developer

  Technologies: Xamarin Forms, .NET, Bluetooth Low Energy

  Development of a cross-platform mobile, and a WPF PC app to program and control smart time switches. Cross-platform implementation of the bluetooth stack with Robotics libraries. Programming an automated rollout mechanism for Google and Apple store. Maintenence of Apple developer and app store connect