Dr. Marcel Rothering

Curriculum Vitae

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Personal Details

Date of birth	22/10/1987
Place of birth	Vreden
Citizenship	German
Gender	Male

Siemens AG

08/2023 - Present Applied Research Scientist at *Siemens AG - Technology*

Senior Key Expert for Industrial Machine Learning Operations

- Lead Data Scientist for Machine Learning Operations (MLOps) projects, supporting external Food & Beverage industry customers
- Developer of runtime code for data-driven applications deployed on Industrial Edge Devices
- Design and development of a framework for trustworthy AI at *Siemens AG*

Product Portfolio Development

- Validation of analytical innovation concepts within an Innovation Framework
- Project Manager for Generative AI pilot initiatives with external customers
- Product Portfolio Manager for the development of Generative AI assistant applications for the shop floor at *Siemens AG*

03/2019 - 08/2023 Data Scientist at *Siemens AG - Digital Industries*

Customer-Facing Data Science

- Anomaly detection for depaneling machines, Kodak printers (feminine hygiene production), and SMT production lines
- Statistical test reduction for end-of-line testing of electrical drives
- Root cause analysis and process optimization for paint shop utilization, PCB printing, and semolina production

Machine Learning Operations (MLOps)

- Monitoring algorithms for energy-efficient *model predictive control* in office buildings
- Monitoring algorithms for virtual testing of welding points

-Operationalizing a false call reduction algorithm on Siemens Industrial Edge

Product Portfolio Development
-AI Operations Services for ML solutions on Siemens Industrial Edge

-Python SDK extension for quality monitoring of tabular data

-Customer and problem hypothesis validation

Additional Responsibilities
-Founder of a data science journal club on Trustworthy AI and MLOps

-Supervision of graduate and undergraduate students

-Facilitation of ideation and scoping workshops for data science use cases

-Intellectual property generation (four filed patents in production use)

Technologies and Tools
-Platforms: Azure ML Studio, AWS SageMaker, Siemens Industrial Edge

-Tools: Python, VS Code, Pandas, Scikit-Learn, Keras, Matplotlib, Plotly

IT Consultant - Synvert

02/2017 - 12/2018   Consultant for Big Data and Data Science at *saracus consulting GmbH*

Tasks
-projects with focus on Data Science and Data Engineering for insurance companies

-cluster computing with Cloudera CDH and Hortonworks HDP

-leading data science, data engineering and cluster administration workshops for customers

-supervision of student seminars in collaboration with the *Westfälische Wilhelms-Universität Münster*

Main Technologies and Tools
-platforms: AWS, Cloudera and Hortonworks

-tools: Spark, Hive, Impala, Sqoop, Python, Pandas, Scikit-Learn and Keras

Research Assistant & PhD Student (Academic degree: Dr. rer. nat.)

12/2012 - 12/2016   Research assistant and PhD student for theoretical particle physics at the *Westfälische Wilhelms-Universität Münster*

PhD thesis   *Precise predictions for supersymmetric particle production at the LHC*; *Grade: magna cum laude*

Emphasis   Theoretical particle physics

Supervisor   Prof. Dr. Klasen

Tasks

- program development for resummation predictions for supersymmetric particle production at the Large-Hadron-Collider (`https://resummino.hepforge.org/`)
- tutor for undergraduate courses like mechanics, thermodynamics, electro-dynamics and quantum mechanics
- supervision of Bachelor and Master theses
- supervision of an internship project: DAAD RISE (Research Internships in Science and Engineering)

Publications

1. B. Fuks, M. Klasen, M. Rothering, *Soft gluon resummation for associated gluino-gaugino production at the LHC*, JHEP 07:053, 2016.
2. B. Fuks, M. Klasen, David R. Lamprea, M. Rothering, *Revisiting slepton pair production at the Large Hadron Collider*, JHEP 01:168, 2014.
3. B. Fuks, M. Klasen, David R. Lamprea, M. Rothering, *Precision predictions for electroweak superpartner production at hadron colliders with Resummino*, Eur. Phys. J. C 73, 2480, 2013.
4. B. Fuks, M. Klasen, David R. Lamprea, M. Rothering, *Gaugino production in proton-proton collisions at a center-of-mass energy of 8 TeV*, JHEP 10:081, 2012.

Academic Studies

Master's Degree Program in Physics (Academic Degree: M. Sc.)

10/2010 - 12/2012	Master's degree in physics at the Westfälische Wilhelms-Universität Münster; *Grade: 1.2*
Master's thesis	*Resummation predictions for slepton pair-production and implications for dark matter*; *Grade: 1.0*
Emphasis	Theoretical particle physics
Supervisor	Prof. Dr. Klasen
Minor	Economy for natural scientists (innovation management and concepts of strategical analysis)
2012	Two-week international summer school and conference on High Energy Physics: Standard Model and Beyond (ISSCSMB '12)

Bachelor's Degree Program in Physics (Academic Degree: B. Sc.)

10/2007 - 10/2010	Bachelor's degree in physics at the Westfälische Wilhelms-Universität Münster; *Grade: 2.1*
Bachelor's thesis	*Optically induced dynamics in coupled two-level-systems*; *Grade: 1.3*
Emphasis	Theoretical solid state physics

Supervisor	Prof. Dr. Kuhn
Minor	Philosophy (logic and metaphysics)

School Education

8/2003 - 7/2007	Secondary school *Städtisches Heriburg-Gymnasium in Coesfeld*; *Abitur-Grade: 2.7*
8/1998 - 7/2003	Secondary school *Städtisches Gymnasium Nepomucenum in Coesfeld*
8/1994 - 7/1998	Primary school *Pankratius-Grundschule in Gescher*

Language Skills

German	Mother tongue
Englisch	Fluent written and spoken
French	Elementary level

Technical Skills

Programming languages	Python (professional), C/C++ (advanced), R (basics), Java (basics), Scala (basics), Fortran(basics) and Shell (basics)
Software-Tools and Frameworks	Mathematica, Spark, Hive, Sqoop, several Python libraries for machine learning like Keras, Tensorflow, Sklearn, Pandas, Matplotlib and Seaborn, LaTeX, Gnuplot and MS-Office
Hadoop Distributions	Cloudera CDH and Hortonworks HDP
Operating Systems	Windows and Unix-based systems
Platforms and Ecosystems	Amazon Web Services, Microsoft Azure and Siemens Industrial Edge

Certificates

04/2017	CCA Spark and Hadoop Developer
05/2017	Cloudera Certified Administrator for Apache Hadoop (CCAH)
05/2018	MIT Professional Education - Internet of Things: Roadmap to a Connected World

Nürnberg, March 19, 2025