Johannes S. Otterbach, Ph.D.

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PROFILE

Self-motivated Ph.D.-level Physicist & Data Scientist with a curious, analytical mind and a passion for data. Experience managing and analyzing data using Python (NumPy, SciPy, pandas, scikit-learn), Apache Spark (SparkSQL, MLlib), Postgres, MATLAB, MATHEMATICA and familiarity with R. Extensive experience with advanced mathematics, statistics and machine learning, as well as presenting and visualizing complex concepts to diverse audiences.

PROFESSIONAL DEVELOPMENT

Data Scientist 8/2015 - present
LendUp, San Francisco, CA

- Architect for new machine learning model scoring service with ability to serve models built in several different languages and frameworks.
- Implemented a Python variation of a learning algorithm for Generalized Additive Models.
- Contributed to key algorithms to generate model insights and auditability.
- Supported Data Scientists with ad-hoc and production algorithms for feature analysis and selection. Provided dashboards and automated reports for business stakeholders.
- Developed and deployed several models for underwriting, including models for new products.
- Analysed and integrated new data sources into production systems to increase data redundancy.

Infrastructure Quality Engineer (Machine Learning) 4/2014 - 7/2015
Palantir Technologies, London, UK (until 1/2015) and Palo Alto, CA

- Analyzed TB-sized, disparate customer-dataset and implemented new propensity model pipeline using Apache Spark, surfacing previously unknown churn indicators.
- Solidified and scaled end-to-end PySpark ETL-machine learning pipeline, resulting in a ∼5x increase in handled data-scale and ∼5x decrease of training time.
- Reduced productization times of new machine learning product features by 3x by creating new featurization prototypes in quick iterations with product and data-science teams.
- Deployed, debugged and maintained complex, distributed software stacks, containing Apache Spark, Hadoop HDFS and IPython Notebook servers, on cloud-based AWS systems. Optimized the stacks for best computational performance and stability.
- Developed CometD-based user-scale testing and analytics framework resulting in a ∼10x improvement in handled users.

Postdoctoral Research Fellow (Theoretical Quantum Physics) 9/2011 - 3/2014
Harvard Quantum Optics Center, Cambridge, MA

- Simulated the time-evolution of models with spatial and temporal randomness using Markov processes and ensemble theory, creating insights into highly correlated matter.
- Explained experimental observations using fitted statistical simulations and analytic solutions.
- Applied mathematical and analytical tools to compare simulated predictions to exact solutions of the model's differential equations and visualized the results.
- Presented research results to general as well as expert audiences through invited seminars, conferences, talks and posters.
- Collaborated, influenced and contributed to research projects with international teams.

EDUCATION

Ph.D. in Physics, *GPA: 4.0 with distinction*, 10/2011
University of Kaiserslautern, Germany

- Internship at the Institute of Atomic and Subatomic Physics, Vienna, Austria, Spring 2011
- Research internship at Harvard University, Cambridge, MA, Spring 2010

B.S./M.S. in Physics, *GPA: 3.93*, 5/2008
University of Kaiserslautern, Germany

- Study abroad program at University of Uppsala, Sweden, Spring 2007

TECHNICAL SKILLS

- Experience with mathematical and statistical Python libraries such as pandas, scikit-learn, NumPy and SciPy and software such as MATLAB and MATHEMATICA.
- Programming languages: Python, Java, Apache Spark, Scala, SQL and Shell scripting. Familiarity with Hadoop HDFS, AWS S3 and R.

SELECTED SCHOLARSHIPS AND AWARDS

Prize Fellowship of the Harvard Quantum Optics Center	2011-2013
2011 Award of the Friends of the University of Kaiserslautern for an outstanding scientific performance as a Ph.D. student in physics	6/2012
Foundation of German Business scholarship	2005-2008

SELECTED PUBLICATIONS

17 in total with 200+ citations. Complete list available upon request.

1. J. Otterbach, M. Moos, D. Muth, M. Fleischhauer, *Wigner Crystallization of Single Photons in Cold Rydberg Ensemble*, Phys. Rev. Lett. 111, 113001 (2013).
2. E. G. Dalla Torre, J. Otterbach, E. Demler, V. Vuletic, M. D. Lukin, *Dissipative Preparation of Spin Squeezed Atomic Ensembles in a Steady State*, Phys. Rev. Lett. 110, 120402 (2013).
3. A. V. Gorshkov, J. Otterbach, M. Fleischhauer, T. Pohl, M. D. Lukin, *Photon-Photon Interactions via Rydberg Blockade*, Phys. Rev. Lett. 107, 133602 (2011).

LANGUAGE SKILLS

German: Native speaker. English: Fluent. Swedish and French: Basic

ACTIVITIES

Avid boulderer and climber. Enjoys slacklining and a good game of Ultimate Frisbee with friends. Good food or an outdoor trip are always welcome.