

STEPHAN RABANSER

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EDUCATION

M.Sc. in Computer Science, Focus on Machine Learning <i>Technical University of Munich (TUM)</i>	October 2015 – February 2019 (exp.) <i>Munich, Germany</i>
Visiting Research Scholar <i>Carnegie Mellon University (CMU)</i>	August 2018 – January 2019 (exp.) <i>Pittsburgh, PA</i>
Honours Degree in Technology Management <i>Center for Digital Technology and Management (CDTM)</i>	August 2015 – February 2019 (exp.) <i>Munich, Germany</i>
Visiting Research Student <i>Massachusetts Institute of Technology (MIT)</i>	February 2016 – June 2016 <i>Cambridge, MA</i>
B.Sc. in Computer Science, Minor in Economic Sciences <i>Technical University of Munich (TUM)</i>	October 2012 – October 2015 <i>Munich, Germany</i>
Higher Education Entrance Qualification (A-levels) <i>Technologische Fachoberschule “Max Valier”</i>	September 2007 – July 2012 <i>Bolzano, Italy</i>

WORK EXPERIENCE

Intern Applied Scientist (Machine Learning) <i>Amazon AI</i>	May 2018 – August 2018 <i>Munich, Germany</i>
<ul style="list-style-type: none">• Evaluated existing and develop new machine learning based algorithms for large-scale lossless data compression.• Implemented autoencoder-based probability distribution estimation for arithmetic coding on tabular data.	
Intern Software Development Engineer <i>Amazon – Core Machine Learning</i>	August 2017 – October 2017 <i>Berlin, Germany</i>
<ul style="list-style-type: none">• Received an overview of standard time series analysis / forecasting techniques.• Implemented Bayes by Backprop (weight uncertainty quantification) for standard MLPs and RNNs in MXNet.• Contributed two chapters to upcoming MXNet book.	
Intern Software Development Engineer <i>Amazon Web Services (AWS) – OpsWorks</i>	July 2016 – October 2016 <i>Berlin, Germany</i>
<ul style="list-style-type: none">• Developed internal business intelligence tool (business metrics reporting and automated dashboard generation) for new OpsWorks service offering (OpsWorks for Chef Automate).• Gained deep insights into a broad range of AWS products and large-scale software development at Amazon.	

PUBLICATIONS

- Stephan Rabanser, Stephan Günnemann, Zachary C. Lipton. 2018. **Failing Loudly: An Empirical Study of Methods for Detecting Dataset Shift**. *ArXiv e-prints (October 2018)*. arXiv:stat.ML/1810.11953. Submitted to the NIPS 2018 Workshop on Security in Machine Learning.
- Stephan Rabanser, Oleksandr Shchur, Stephan Günnemann. 2017. **Introduction to Tensor Decompositions and Their Applications in Machine Learning**. *ArXiv e-prints (November 2017)*. arXiv:stat.ML/1711.10781.
- CDTM Class of Fall 2015. 2015. **Entrepreneurship in Bavaria**. *Center for Digital Technology and Management*. ISBN: 978-3-9815538-9-5.

TECHNICAL STRENGTHS

Programming Languages	Python, Java, Swift, Ruby, C, HTML5/CSS3/JS
ML Frameworks	Keras, TensorFlow, MXNet, sklearn
Tools	Git, IDEA suite, Jupyter, Xcode, Sketch

LANGUAGES

German	Native
English	Fluent, TOEFL iBT 104 (October 2014)
Italian	Proficient

Elite Network of Bavaria*Member*

Since April 2016

*Munich, Germany***Apple Worldwide Developers Conference (WWDC)***Student Scholarship Recipient*

June 2013

San Francisco, CA, USA

- Developed résumé iOS app to highlight academic and professional experience as well as hobbies.
- Got awarded a free WWDC ticket.

SELECTED COURSEWORK & PRIOR RESEARCH EXPERIENCE

Data Shifts and Distribution Change Point Detection*Master Thesis, Carnegie Mellon University*

August 2018 – February 2019 (exp.)

Pittsburgh, PA

- Currently conducting research on dataset shift and distribution change point detection between training and testing environments.
- Set up a large-scale empirical study on efficient shift estimation, shift pinpointing, and shift correction.
- Submitted preliminary findings to NIPS workshops.

Denosing Spectral Clustering Through Latent Data Decomposition*Guided Research, Professorship of Data Mining and Analytics*

October 2017 – March 2018

Munich, Germany

- Developed two new methods to make spectral clustering more robust (reduced sensitivity to noise).
- Modeled problem as latent data decomposition instead of similarity graph decomposition.
- Initial results outperform similar techniques on many datasets, but extensive hyper-parameter tuning is needed.

Data Science in Astrophysics and Industry*Interdisciplinary Project, Max Planck Institute for Astrophysics*

March 2017 – July 2017

Munich, Germany

- Transformed an existing Gaussian Mixture Model (GMM) into Google TensorFlow.
- Optimized the algorithmic implementation of the model (e.g. number of mixture components, hyper-parameters).
- Explored different training methods (stochastic vs. deterministic and expectation maximization (EM) vs. gradient descent vs. Newton).
- Determined parallelizable operations and to which extend sync points are needed.
- Researched, implemented, and improved online learning techniques for GMMs and compared them to standard EM and tensor decomposition approaches.

Stylight Now, Tech Lead*Managing Product Development – CDTM*

October 2015 – January 2016

Munich, Germany

- Developed a simple and easy direct checkout solution for the fashion aggregator Stylight to raise the conversion rate throughout their platform, but especially in their apps.
- Created iOS app (UI/UX + code) which will be further refined by Stylight and eventually incorporated into their live platform.
- Got hands on experience with business development strategies, user and market research, project management, and collaboration in a diverse team.

Prototyper*Bachelor's Thesis Project – Chair for Applied Software Engineering*

May 2015 – October 2015

Munich, Germany

- Developed a workflow and a web service which enables Continuous Delivery of executable prototypes in early requirements engineering.
- Project will be developed further with theses, guided research projects, and student assistant positions.

Teaching Assistant*Swift Introduction Course – Chair for Applied Software Engineering*

August 2014 – November 2014

Munich, Germany

- Held a 2h talk and prepared the corresponding tutorial about RESTful interaction with web services within iOS and OS X apps.
- Developed a course-matching sample API by using Java technologies (Maven, Glassfish, Jersey, JPA).
- Supported course administration by writing and reviewing course assignments.
- Highlighted by Apple as one of the first Swift courses at major universities.