

# STEPHAN RABANSER

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## EDUCATION

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

## WORK EXPERIENCE

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

## PUBLICATIONS

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

## TECHNICAL STRENGTHS

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

## LANGUAGES

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<b>German</b>	Native
<b>English</b>	Fluent, TOEFL iBT 112 (November 2018)
<b>Italian</b>	Proficient

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<b>NeurIPS 2018 Student Volunteer</b>	December 2018
<b>Member of the Elite Network of Bavaria</b>	Since April 2016
<b>Apple Worldwide Developers Conference (WWDC)</b> <i>Student Scholarship Recipient</i>	June 2013 San Francisco, CA
<ul style="list-style-type: none"> <li>• Developed résumé iOS app to highlight academic and professional experience as well as hobbies.</li> <li>• Got awarded a free WWDC ticket.</li> </ul>	

## SELECTED COURSEWORK &amp; PRIOR RESEARCH EXPERIENCE

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<b>Data Shifts and Distribution Change Point Detection</b> <i>Master's Thesis – CMU &amp; TUM</i>	August 2018 – February 2019 (exp.) Pittsburgh, PA & Munich Germany
<ul style="list-style-type: none"> <li>• Currently conducting research on dataset shift and distribution change point detection between training and testing environments.</li> <li>• Set up a large-scale empirical study on efficient shift estimation, shift pinpointing, and shift correction.</li> </ul>	
<b>Denosing Spectral Clustering Through Latent Data Decomposition</b> <i>Guided Research – Professorship of Data Mining and Analytics, TUM</i>	October 2017 – March 2018 Munich, Germany
<ul style="list-style-type: none"> <li>• Developed two new methods to make spectral clustering more robust (reduced sensitivity to noise).</li> <li>• Modeled problem as latent data decomposition instead of similarity graph decomposition.</li> <li>• Initial results outperform similar techniques on many datasets, but extensive hyper-parameter tuning is needed.</li> </ul>	
<b>Data Science in Astrophysics and Industry</b> <i>Interdisciplinary Project – Max Planck Institute for Astrophysics (MPA)</i>	March 2017 – July 2017 Munich, Germany
<ul style="list-style-type: none"> <li>• Transformed an existing Gaussian mixture model (GMM) into Google TensorFlow.</li> <li>• Optimized the algorithmic implementation of the model (e.g. number of mixture components, hyper-parameters).</li> <li>• Explored different training methods (stochastic vs. deterministic and expectation maximization (EM) vs. gradient descent vs. Newton).</li> <li>• Determined parallelizable operations and to which extend sync points are needed.</li> <li>• Researched, implemented, and improved online learning techniques for GMMs and compared them to standard EM and tensor decomposition approaches.</li> </ul>	
<b>Stylight Now, Tech Lead</b> <i>Managing Product Development – CDTM</i>	October 2015 – January 2016 Munich, Germany
<ul style="list-style-type: none"> <li>• 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.</li> <li>• Created iOS app (UI/UX + code) which will be further refined by Stylight and eventually incorporated into their live platform.</li> <li>• Got hands on experience with business development strategies, user and market research, project management, and collaboration in a diverse team.</li> </ul>	
<b>Prototyper</b> <i>Bachelor's Thesis Project – Chair for Applied Software Engineering, TUM</i>	May 2015 – October 2015 Munich, Germany
<ul style="list-style-type: none"> <li>• Developed a workflow and a web service which enables continuous delivery of executable prototypes in early requirements engineering.</li> <li>• Project will be developed further with theses, guided research projects, and student assistant positions.</li> </ul>	
<b>Teaching Assistant</b> <i>Swift Introduction Course – Chair for Applied Software Engineering, TUM</i>	August 2014 – November 2014 Munich, Germany
<ul style="list-style-type: none"> <li>• Held a 2h talk and prepared the corresponding tutorial about RESTful interaction with web services within iOS and OS X apps.</li> <li>• Developed a course-matching sample API by using Java technologies (Maven, Glassfish, Jersey, JPA).</li> <li>• Supported course administration by writing and reviewing course assignments.</li> <li>• Highlighted by Apple as one of the first Swift courses at major universities.</li> </ul>	