

Franziska Horn

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experience

03/2018 – present	Working Student - most experienced Python developer in the team, responsible for code review	BASF, Ludwigshafen
09/2017 – 02/2018	Research Assistant - in the machine learning group of Prof. Dr. Klaus-Robert Müller - predictive maintenance / time series analysis project in collaboration with BASF (worked on-site in Ludwigshafen) - designed, implemented, and evaluated linear and non-linear regression models in Python to predict the degradation of catalysts in chemical plants	TU Berlin (Technische Universität Berlin)
07/2016 – 06/2017	Machine Learning Scientist - developed a chatbot AI to respond to user messages automatically (RiveScript) - implemented a content recommendation API for newspaper articles, which can be used by all clients to promote their content (Python Flask App) - selected new members for the machine learning team	spectrm, Berlin
02/2014 – 06/2016	Data Scientist - advanced analytics consulting projects, ML algorithm development in Python, presentation of results, and project management - clients included razorfish (NLP backend for automatic content classification) and outfittery (style prediction algorithms for curated shopping)	idalab, Berlin
09/2013 – 09/2014	Student Research Assistant - machine learning research in the group of Prof. Dr. Klaus-Robert Müller - focus on text classification, unsupervised learning (word2vec vector space embedding, dimensionality reduction), and information extraction - short-term research stay at UCLA; collaboration with Prof. Dr. Alcino Silva	TU Berlin
08/2012 – 08/2013	Student Research Assistant - EEG data analysis at the Berlin Brain-Computer Interface Lab - developed and efficiently implemented new algorithms in MatLab - three peer-reviewed publications (journal and conferences)	TU Berlin
07/2011 – 10/2011	Research Intern - at the McGovern Institute for Brain Research / Gabrieli Lab - analyzed fMRI data using NIPY with results published in JAMA Psychiatry - sponsored by a DAAD RISE scholarship	MIT (Massachusetts Institute of Technology), Cambridge, MA
07/2007 – 12/2009	Student Research Assistant - worked independently, responsible for collection of infrared spectroscopy data	Fraunhofer Institute for Chemical Technology, Pfinztal

education

04/2015 – present	Ph.D. Candidate - in the machine learning group of Prof. Dr. Klaus-Robert Müller - developed the Similarity Encoder (SimEc) neural network architecture for learning low dimensional embeddings of data points by preserving similarity structures found in the original high dimensional input data; with applications e.g. in the area of NLP by extending the word2vec algorithm to produce embeddings for out-of-vocabulary words and words with multiple meanings - supervised bachelor and master students - funded by the Elsa-Neumann Scholarship from the universities of Berlin	TU Berlin (Technische Universität Berlin)
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04/2013 – 03/2015	M.Sc. Computer Science TU Berlin <ul style="list-style-type: none"> - focus: intelligent systems. machine learning: theory, lab course, project; advanced information management (big data & Hadoop); neurobiology - thesis: KNOWLEDGE EXTRACTION FROM COMPLEX BIOLOGICAL TEXTS: A MACHINE LEARNING APPROACH (supervisor: Prof. Dr. Klaus-Robert Müller, TU Berlin) - graduated top of my class (1.0)
10/2012 – 03/2013	M.Sc. Computational Neuroscience BCCN / TU Berlin <ul style="list-style-type: none"> - interdisciplinary & strongly research oriented international master program - highly competitive application process (10 places/year) - switched to computer science after 1 semester to deepen my technical knowledge and get a wider choice of application areas
10/2009 – 09/2012	B.Sc. Cognitive Science Universität Osnabrück <ul style="list-style-type: none"> - interdisciplinary study program including courses in neurobiology, computer science, psychology, artificial intelligence, mathematics, computational linguistics, neuroinformatics, and philosophy; taught in English - thesis in the field of brain-computer interfaces at the TU Berlin: COMPARING AND COMBINING MULTIPLE EEG FEATURES IN MOTOR IMAGERY BCI – A LARGE SCALE STUDY (supervisor: Prof. Dr. Benjamin Blankertz, TU Berlin) - graduated with distinction (1.1)
09/2000 – 06/2009	Abitur (secondary school) Fichte-Gymnasium Karlsruhe <ul style="list-style-type: none"> - 11th grade as a year abroad in Missouri (USA)

activities

October 2015	Data2Day Workshop in Karlsruhe, Germany: Introduction to Data Science <ul style="list-style-type: none"> - 1 day workshop where I was responsible for the practical part and instructed the 25 participants on how to use Python, numpy, pandas, and sklearn to get the most out of their data
September 2014	Advanced Scientific Programming in Python – Summer School in Split, Croatia <ul style="list-style-type: none"> - lectures and tutorials on advanced topics like parallelization and Cython - programming project in teams: artificial intelligence for a pacman game
July 2012	McKinsey Technology Lab “Big Data” in Prague <ul style="list-style-type: none"> - 4 day workshop to discuss the importance and usability of big data technology in various business areas, including a case study developing the concept for a big data application
regularly	various Meetups in Berlin <ul style="list-style-type: none"> - e.g. PyData and Machine Learning Talks

skills

language	German (native), English (fluent), French (basics)
programming	Python (7+ years), SQL, MatLab, R, Java ~ https://github.com/cod3licious
computing	Linux/Unix version control (git) office applications & LaTeX Adobe Photoshop, InDesign, Illustrator

publications

Learning Similarity Preserving Representations with Neural Similarity Encoders
 Franziska Horn and Klaus-Robert Müller
arXiv preprint arXiv:1702.01824, 2017.

Context encoders as a simple but powerful extension of word2vec

Franziska Horn

In *Proceedings of the 2nd Workshop on Representation Learning for NLP*, pages 10-14, Vancouver, Canada, August 2017.
Association for Computational Linguistics.

Interactive Exploration and Discovery of Scientific Publications with PubVis

Franziska Horn

arXiv preprint arXiv:1706.08094, 2017.

“What is Relevant in a Text Document?”: An Interpretable Machine Learning Approach

Leila Arras, Franziska Horn, Gregoire Montavon, Klaus-Robert Müller and Wojciech Samek

PLoS one, 12(8):e0181142, 2017.

Discovering topics in text datasets by visualizing relevant words

Franziska Horn, Leila Arras, Gregoire Montavon, Klaus-Robert Müller and Wojciech Samek

arXiv preprint arXiv:1707.06100, 2017.

Exploring text datasets by visualizing relevant words

Franziska Horn, Leila Arras, Gregoire Montavon, Klaus-Robert Müller and Wojciech Samek

arXiv preprint arXiv:1707.05261, 2017.

Explaining Predictions of Non-Linear Classifiers in NLP

Leila Arras, Franziska Horn, Gregoire Montavon, Klaus-Robert Müller and Wojciech Samek

In *Proceedings of the 1st Workshop on Representation Learning for NLP*, pages 1-7, Berlin, Germany, August 2016.
Association for Computational Linguistics.

Robust Artifactual Independent Component Classification for BCI Practitioners

I. Winkler, S. Brandl, F. Horn, E. Waldburger, C. Allefeld, M. Tangermann

Journal of Neural Engineering, 11(3):035013, 2014.

Predicting Treatment Response in Social Anxiety Disorder From Functional Magnetic Resonance Imaging

O. Doehrmann, S. S. Ghosh, F. E. Polli, G. O. Reynolds, F. Horn, A. Keshavan, ... & J. D. Gabrieli

JAMA Psychiatry, 70(1):87-97, 2013.

Increasing the Spectral Signal-To-Noise Ratio of Common Spatial Patterns

Franziska Horn, Sven Dähne

Proceedings of the Fifth International Brain-Computer Interface Meeting, 2013.

Combining Multiple EEG Features in Motor Imagery BCI

Franziska Horn, Johannes Höhne, Sven Dähne, Benjamin Blankertz

BBCI Workshop - Advances in Neurotechnology, Berlin, Germany, 2012.