

Richard Michael

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+ Professional Experience

- since 04/2020 **Student Assistant Bioinformatics & Protein Design - Novozymes**, Copenhagen, Denmark
- Analyzed and modeled protease cleavage behavior using ensemble learning methods and gradient boosted algorithms (Python).
 - Developed probabilistic descriptive and imputation models on experimental protein mutation data for different performance and quality metrics (Python, Pyro, R).
- 05/2017-02/2021 **Student Worker Data Science - zapliance GmbH**, Hamburg, Germany
- Participated in the development of an assessment metric for a client's price-model recommendation algorithm together with the *Artificial Intelligence Center Hamburg, e.V.*
 - Developed, benchmarked and tested machine-learning algorithms during product development of an ERP-based analytics system (Python).
 - Maintained and developed an ETL system for user-behavior data on remote Linux platforms (No-SQL, MySQL, Python, Bash).

+ Education

- 09/2019-06/2021 **University of Copenhagen**, Denmark,
M.Sc. Bioinformatics (Computer Science Track, GPA: 10.5/12)
Thesis: Predictive Modeling of Protein Variants using Gaussian Processes and Deep Generative Models - *currently in progress*
Supervision: Prof. W. Boomsma, Dr. S. Bartels, Dr. P. Tian
- 10/2016-08/2019 **University of Osnabrück**, Germany,
B.Sc. Cognitive Science (GPA: 1.5 - excellent) (*Computer Science, Artificial Intelligence, Neuroinformatics, Neuropsychology, Mathematics*)
Thesis: Classification and Modeling of User Behavior with Unsupervised Clustering and Bayesian Methods
Supervision: Prof. M. Franke, Prof. N. Gehrke
- 2005-2014 **Bertolt-Brecht-Gymnasium Dresden**, Abitur (1.6) and IB

+ Academic Projects

- 11/2020-01/2021 **Gaussian Processes - Theory and Implementation**
DIKU, University of Copenhagen
- Implemented a predictive mutational-variant stability model using Gaussian Processes in PyTorch, Pyro, Numpy under supervision of Prof. Boomsma and Dr. Bartels (15 ECTS) - see here.
 - Worked through a course in Gaussian Processes with use of *Gaussian Processes for Machine Learning* (Rasmussen 2006).
- 06/2020-08/2020 **Deep Probabilistic Programming**
BIO & DIKU, University of Copenhagen
- Worked through the first iteration of a proposed course in probabilistic programming with use of *Bayesian Data Analysis* (Gelman 2020)
 - implemented probabilistic models in Pyro and Numpyro under the supervision of Prof. Hamelryk and Prof. Al-Sibahi (7.5 ECTS).

07/2018-10/2018 **Research Student in Computational Biology at the Ontario Institute for Cancer Research**, University of Toronto, CAN

- Contributed to a research project in benchmarking variant-caller algorithms on sequenced cancer genome data from the ICGC-TCGA (Perl, R).

+ **Scholarships & Awards**

10/2017-06/2021 **sdw Klaus-Murmann Scholarship**, full scholarship (B.Sc. and M.Sc. studies) granted from the German economy

07/2018-10/2018 **Mitacs Globalink Research Fellowship**, Canadian research scholarship together with the DAAD

+ **Extracurricular Commitments**

04/2020 **Copenhagen Bioinformatics Hackathon**, developed a machine learning pipeline to solve the challenge of *building a platform independent predictor for breast cancer subtypes* together with a team of Bioinformatics students.

06/2018-05/2019 **Head of the sdw foundation, students' group Münster-Osnabrück**

03/2018-02/2019 **Head and chairman of the student body for Cognitive Science**

+ **Languages**

mother tongue: **German** foreign languages: **English(C1), Danish(A1)**

+ **Communication Skills**

since 05/2020 Maintainer and author of laplaceml.com, a blog focused on probabilistic machine learning topics - also published on towardsdatascience.com.