Richard Michael

PhD fellow in Machine Learning at the University of Copenhagen and the Pioneer Centre for AI

📞 (+45) 60 76 08 71 | ✉ r.michael@posteo.net | in rimichael | ⊙ RMichae1 | 🎓 Google Scholar | 🌐 German

+ Education

08/2022-08/2025 **University of Copenhagen**, DK,

Ph.D. in Computer Science

Title: Principled Bayesian Optimization for Protein Engineering.
Focus: Developing Bayesian optimization and active learning methods for discrete sequences, in generative protein design and lead refinement in collaboration with a research group in biochemistry.
Advisors: Prof. W. Boomsma (DIKU), Prof. N. Hatzakis (CHEM)
– DDSA fellow (Danish Data Science Academy) (2022-2025)
– *Teaching Assistant*: Probabilistic Machine Learning (2022/23, 2023/24, 2024/25)
– *Selected Schools*: ProbNum 2023 (Tübingen, GER), MLSS 2024 (Okinawa, JPN)

10/2024-12/2024 **University of Oxford**, UK, *Department of Statistics*
Dept. Visiting Student with Tom Rainforth's group at OxCSML,
Project: Active learning of higher-order biological sequence functions. (torch)

09/2019-06/2021 **University of Copenhagen**, DK,

M.Sc. in Bioinformatics – GPA: 10.9/12

Thesis: Predictive protein property modeling using GPs and encoders.
Supervisors: Dr. S. Bartels, Dr. P. Tian, Prof. W. Boomsma

10/2016-08/2019 **University of Osnabrück**, GER,

B.Sc. in Cognitive Science – GPA: 1.5 (very good)

Modules: Computer Science, Neuroinformatics, Applied Mathematics, Neuropsychology, Artificial Intelligence.

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

10/2015-03/2016 **DHBW Mannheim**, GER, B.Sc. International Management for Business IT.

08/2005-06/2014 **Bertolt-Brecht-Gymnasium Dresden**, GER, *Abitur* (GPA: 1.6), International Baccalaureate, USA exchange to Rexburg, ID (2011/12).

+ Selected Publications

09/2024 R. Michael, S. Bartels, M. González-Duque, Y. Zainchkovskyy, J. Frellsen, S. Hauberg, W. Boomsma. Discrete Bayesian Optimization by Continuous Objective Relaxation. arXiv, *under review*. (trieste, tensorflow)

06/2024 M. González-Duque, R. Michael, S. Bartels, Y. Zainchkovskyy, S. Hauberg, W. Boomsma. A survey and benchmark of high-dimensional Bayesian optimization of discrete sequences. NeurIPS 2024, Datasets and Benchmarks. website, repository, documentation. (torch, ax, wandb, TDC, FoldX, PyRosetta ...)

06/2023 R. Michael*, J. Kæstel-Hansen*, P. M. Groth, S. Bartels, J. Salomon, P. Tian, N. S. Hatzakis, W. Boomsma. A systematic analysis of regression models for protein engineering. PLOS Comp. Bio., repository. (tensorflow, sklearn, mlflow)

+ Selected Honors, Grants & Fellowships

02/2023 AISTATS, top reviewer (top 10%)

06/2022 DDSA, PhD grant for "Principled Bayesian Optimization and scientific ML for Protein Engineering" (1,8 mio. DKK / ≈257,000 USD)

07/2018 DAAD & Mitacs, Globalink research fellowship (≈3,000 EUR / ≈3,200 USD)

10/2017 sdw (Stiftung d. Deutschen Wirtschaft), Klaus-Murmann scholar (B.Sc. & M.Sc.)

+ Industrial & Academic Experience

04/2022-08/2022   **University of Copenhagen, DIKU**, Copenhagen, DK
Research Assistant, at the Bio-ML group, Machine Learning section.

02/2022-04/2022   **Ernst & Young**, Copenhagen, DK
Consultant, Data & Analytics, Technology, AI Risk.

09/2021-01/2022   **Banking Circle SA**, Copenhagen, DK
Associate Data Engineer, Data & Core Banking Engineering.
- Scaled on-demand analytics computations across distributed clusters, infrastructure as code, and internal library development (`azure`, `PySpark`).

04/2020-06/2021   **Novozymes A/S**, Lyngby, DK
Student Assistant, Bioinformatics & Protein Design.
- Contributed predictive analytics, visualization, and classification for a protein-peptide project.

05/2017-02/2021   **zapliance GmbH**, Hamburg, GER
Student Assistant and Freelance Consultant, Data Science.
- Built CRM ETL pipelines and models for customer clusters (`SQLAlchemy`) and contributed to model audits in-house and for clients.

+ Extracurricular

04/2020, 04/2021   Copenhagen Bioinformatics Hackathons, led a winning team to solve a ligand binding prediction challenge with GP-LVMs within 48h (`pyro`) (2021).

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

03/2018-02/2019   Head of the Cognitive Science student body, elected as one of three students leading 50 members to coordinate studies program and activities.

+ Languages

German (native), English (C1, TOEFL: 115), Danish (A2)

+ Interests

Trail running, endurance sports