# Christian Buus Michelsen

Senior ML Engineer with a flair for multidisciplinary problem solving




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## PROFILE

With a background in physics, I have a strong technical foundation in machine learning, applied data science, and mathematical modelling. During my Ph.D., at the Statens Serum Institut during the beginning of the COVID lockdown, and now as a Senior ML Engineer at TICRA, I have further strengthened my multidisciplinary problem-solving skills, including multiobjective and constrained optimization, developing and deploying ML methods in Python and Fortran, and building robust CI/CD infrastructure. I have practiced working in extremely high-performance environments with tight deadlines and a requirement for strong project management skills.

## SKILLS

### Data Science

- Data Analysis & Statistics
- Machine Learning & AI
- Bayesian Inference
- Data Visualisation

### Personal strengths

- Project management
- Science communication
- Stakeholder management
- Knowledge translation

### Programming

- Python
- Fortran
- Git
- Azure Data Scientist Associate

## EMPLOYMENT

**Senior ML Engineer at TICRA, Copenhagen** 2024 – Present

- Designed Bayesian Optimization methods for multiple and constrained objectives in Python and implemented them in Fortran production code.
- Established GitLab-based CI/CD infrastructure, including runners and automated testing and deployment pipelines.

**Data Scientist at Halfspace, Copenhagen** 2022 – 2024

- Developed a Bayesian neural network to utilize uncertainties in forecasting and dynamic pricing models to reduce business risks;
  an Edelman Award winning project and 5x gold at Danish Digital Awards.
- Accelerated Better Collective's football line-up building tool 16.6x using advanced methods from operations research (OR).
- Implemented bespoke GenAI solutions, including the use of RAGs and fine tuning LLMs, for multiple companies and NGOs.

**Ph.D. student at University of Copenhagen** 2018 – 2022

- Developed statistical software in the field of ancient genomics using modern statistical methods, which led to frontpage in Nature.
- Used machine learning models to reduce the risk of being readmitted after a knee or hip operation.
- Applied deep learning techniques to classify ancient vs. modern DNA.
- Used Bayesian inference to estimate the size of loci in diffusion processes.

**Researcher at Statens Serum Institut, SSI** 2020 – 2021

- Developed an agent-based model to predict the spread of COVID-19 as part of "Ekspertgruppen for matematiske modelberegninger" at SSI.
- Optimized the model to simulate the entire Danish population (5.8 million).

**Science Educator at Sorø Akademi / Astra** 2019 – Present

- Interactive presentation of statistics and machine learning to high schoolers.

## EDUCATION

**Exchange Program at SISSA, Trieste, Italy** 2021 – 2022

- Ph.D. exchange program at the International School for Advanced Studies.
- Worked with Professor Guido Sanguinetti, head of the Machine Learning and Systems Biology group at SISSA.

**Master of Science in Physics, University of Copenhagen, Denmark** 2016 – 2020

- Applied machine learning methods to particle physics data from CERN.
- Attended the CERN School of Computing in Tel Aviv, Israel, in 2018. This is a two-week programme focused on advanced topics of scientific computing.
- Studied at University of Canterbury, New Zealand, from 2016-2017.

**Bachelor of Science in Physics, University of Copenhagen, Denmark** 2013 – 2016

- Performed a Bayesian analysis of the radial velocities from stars orbiting black holes to quantify their general relativistic effects.

## VOLUNTEERING

**Board member of Danish Data Science Community (DDSC)** 2024 – Present

- Organize Data Science-related events in Denmark.

**Main Organizer of Julia Meetup** 2022 – Present

- Initialised and organized Julia meetups in Copenhagen.

**Judge at Young Scientists competition (Unge Forskere)** 2021 – 2022

- Evaluated and judged young students at the Unge Forskere competition.

## HOBBIES

In my spare time, I am a professional wedding photographer and outdoor enthusiast. When I am not kayaking at sea, hiking in the mountains or enjoying nature with my wife and two kids, I relax by editing the pictures from my travels or watching a new series on our couch in Holte.