

Didrik Nielsen | Curriculum Vitae

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MSc in *Applied Physics and Mathematics*; PhD in *Machine Learning*. Passionate about probabilistic machine learning, deep learning and more generally anything related to coding, mathematics and problem solving.

Education

- **Technical University of Denmark (DTU)** **Copenhagen, Denmark**
January 2019–December 2021
PhD Student
Researching Unsupervised Deep Learning with Prof. Ole Winther.
- **University of Amsterdam (UvA)** **Amsterdam, Netherlands**
January 2020–June 2020
Visiting PhD Student
Visiting AMLAB, working with Prof. Max Welling.
- **Norwegian University of Science and Technology (NTNU)** **Trondheim, Norway**
August 2011–December 2016
MSc Applied Physics and Mathematics, Average Grade: A
Main profile: Industrial Mathematics. Specialization: Statistics.
- **National University of Singapore (NUS)** **Singapore, Singapore**
January 2015–May 2015
Exchange Student, Average Grade: A-

Employment

- **Norwegian Computing Center** **Oslo, Norway**
January 2022–
Researcher
 - Developing machine learning methodology to solve problems for industry.
 - Working on multiple research projects with industrial partners.
- **raffle.ai** **Copenhagen, Denmark**
September 2018–December 2018
Research Assistant
 - Working with the start-up raffle.ai through a research assistant position at DTU Compute.
 - Developing enterprise search using *natural language processing* and *deep learning*.
- **Center for Advanced Intelligence Project (AIP), RIKEN** **Tokyo, Japan**
March 2017–August 2018
Research Assistant
 - Working with Mohammad Emtiyaz Khan in the Approximate Bayesian Inference (ABI) team.
 - Conducting research with a focus on *variational inference* and *Bayesian neural networks*.
 - Contributed to three conference papers, one arXiv paper and two workshop papers.
- **Norwegian Computing Center** **Oslo, Norway**
June 2016–July 2016
Summer Intern
 - Summer internship in the Statistical Analysis, Machine Learning and Image Analysis (SAMBA) department.
 - Working on a research project on fraud detection.
- **Norsk Hydro** **Oslo, Norway**
June 2015–August 2015
Summer Intern
 - Summer internship in the Energy Markets department.
 - Developing trading strategies for energy markets using machine learning.
- **If P&C Insurance** **Oslo, Norway**
June 2014–August 2014
Summer Intern
 - Summer internship in the Motor Insurance department.
 - Analysis of trends in insurance claims and the effects of a marketing campaign.

Teaching & Invited Talks

- **Probabilistic AI Summer School** Helsinki, Finland
Invited Lecture on Normalizing Flows June 2022
- **Visual Intelligence Seminar Series** Oslo, Norway
Invited Talk on Normalizing Flows and Diffusion Models October 2021
- **Probabilistic AI Summer School** Trondheim, Norway
Invited Lecture on Normalizing Flows June 2021
- **MLLS Seminar** Copenhagen, Denmark
Invited Talk on Normalizing Flows April 2021
- **AMLAB Seminar** Amsterdam, Netherlands
Invited Talk on SurVAE Flows September 2020
- **Technical University of Denmark** Copenhagen, Denmark
Teaching Assistant in Deep Learning course 2019 & 2020 September 2019–December 2020
- **Data Science Summer School** Paris, France
Teaching Assistant in two-day tutorial on Approximate Bayesian Inference June 2018
- **Works Applications** Tokyo, Japan
Invited Talk on Bayesian Deep Learning May 2018
- **Norwegian University of Science and Technology** Trondheim, Norway
Teaching Assistant in 7 courses on statistics, calculus, finance and fluid mechanics. January 2013–December 2016

Service

- **Machine Learning Conferences** Online
Reviewer June 2019–
I served as a reviewer for *JMLR*; *IEEE*; *NeurIPS* (2019, 2020, 2021); *ICML* (2020, 2021); *AISTATS* (2021).
- **Hans Majestet Kongens Garde** Oslo, Norway
Guard Soldier July 2010–July 2011
Compulsory military service. I served one year as a guard soldier in the Royal Guard.

Selected Publications

- *Argmax Flows and Multinomial Diffusion: Learning Categorical Distributions.* E. Hooeboom*, D. Nielsen*, P. Jaini, P. Forré, M. Welling (NeurIPS, 2021)
- *Sampling in Combinatorial Spaces with SurVAE Flow Augmented MCMC.* P. Jaini, D. Nielsen, M. Welling (AISTATS, 2021)
- *SurVAE Flows: Surjections to Bridge the Gap between VAEs and Flows.* D. Nielsen, P. Jaini, E. Hooeboom, O. Winther, M. Welling (NeurIPS, 2020) [Oral presentation].
- *Closing the Dequantization Gap: PixelCNN as a Single-Layer Flow.* D. Nielsen, O. Winther (NeurIPS, 2020).
- *Fast and Scalable Bayesian Deep Learning by Weight-Perturbation in Adam.* M.E. Khan*, D. Nielsen*, V. Tangkaratt*, W. Lin, Y. Gal, A. Srivastava (ICML, 2018).

Skills

- **Languages:** Norwegian, English.
- **Programming Languages:** Python, R, MATLAB, C++.
- **Frameworks & Libraries:** PyTorch, TensorFlow.
- **Tools:** LaTeX, Git.