

Didrik Nielsen | Curriculum Vitae

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MSc in *Applied Physics and Mathematics*; PhD Candidate in *Machine Learning*. Passionate about probabilistic machine learning, including design and evaluation of probabilistic models and approximate inference methods.

Education

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

Employment

- **DTU Compute** **Copenhagen, Denmark**
Research Assistant
September 2018–December 2018
 - Working on a project with the start-up raffle.ai.
 - Developing enterprise search using *natural language processing* and *deep learning*.
- **Center for Advanced Intelligence Project (AIP), RIKEN** **Tokyo, Japan**
Research Assistant
March 2017–August 2018
 - 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**
Summer Intern
June 2016–July 2016
 - 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**
Summer Intern
June 2015–August 2015
 - Summer internship in the Energy Markets department.
 - Developing trading strategies for energy markets using machine learning.
- **If P&C Insurance** **Oslo, Norway**
Summer Intern
June 2014–August 2014
 - Summer internship in the Motor Insurance department.
 - Analysis of trends in insurance claims and the effects of a marketing campaign.

Teaching & Invited Talks

- **MLLS Seminar** **Copenhagen, Denmark**
Invited Talk *April 2021*
I gave a one-hour talk about normalizing flows.
- **AMLAB Seminar** **Amsterdam, Netherlands**
Invited Talk *September 2020*
I gave a one-hour talk about our recent paper on *SurVAE Flows*.
- **Technical University of Denmark** **Copenhagen, Denmark**
Teaching Assistant *September 2019–December 2020*
I was a TA in the *Deep Learning* course in both 2019 and 2020.
- **Data Science Summer School** **Paris, France**
Teaching Assistant *June 2018*
I was a TA in the two-day tutorial on Approximate Bayesian Inference.
- **Works Applications** **Tokyo, Japan**
Invited Talk *May 2018*
I gave a one-hour talk on Bayesian Deep Learning.
- **Norwegian University of Science and Technology** **Trondheim, Norway**
Teaching Assistant *January 2013–December 2016*
I held in total 7 TA positions in courses on statistics, calculus, finance and fluid mechanics.

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. Hoogetboom, D. Nielsen, P. Jaini, P. Forré, M. Welling (Preprint, 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. Hoogetboom, 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.