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

Probabilistic AI Summer School   **Trondheim, Norway**
Invited Lecture   *June 2021*

I held a two-hour lecture on normalizing flows.

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   **Tronhdeim, 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. Hoogeboom*, 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. Hoogeboom, 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.