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**
  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

- **Norwegian Computing Center** — **Oslo, Norway**
  Researcher — *January 2022–*
  - Developing machine learning methodology to solve problems for industry.
  - Working on multiple research projects with industrial partners.
- **raffle.ai** — **Copenhagen, Denmark**
  Research Assistant — *September 2018–December 2018*
  - 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**
  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 (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. 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.