Didrik Nielsen | Curriculum Vitae

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MSc in Applied Physics and Mathematics. Passionate about *machine learning*, in particular Bayesian approaches. Interested in the development and evaluation of probabilistic models, as well as design of approximate inference methods.

Education

- **Technical University of Denmark (DTU)** — **Copenhagen, Denmark**
  PhD Student — *January 2019–*

  Project: Flexible Densities for Deep Generative Models.
  Supervisor: Prof. Ole Winther.
  Co-supervisor: Assoc. Prof. Mikkel Schmidt.

- **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 as a research assistant at DTU Compute with Prof. Ole Winther.
  - Allocated to a project with the start-up raffle.ai. Tasks:
    - Developing corporate virtual assistants using information retrieval, natural language processing and deep learning.

- **Center for Advanced Intelligence Project (AIP), RIKEN** — **Tokyo, Japan**
  Research Assistant — *March 2017–August 2018*

  - Working in the Approximate Bayesian Inference (ABI) team.
  - Working with Mohammad Emtiyaz Khan in research with a focus on variational inference. Tasks:
    - Participate in the generation, execution and communication of research ideas.
    - Contributed to three conference papers, one arXiv paper and two workshop papers.

- **Norwegian Computing Center** — **Oslo, Norway**
  Assistant Research Scientist — *June 2016–July 2016*

  - Summer job in the Statistical Analysis, Machine Learning and Image Analysis (SAMBA) department.
  - Working on a research project on fraud detection. Tasks:
    - Clustering of insurance policies.
    - Hyperparameter tuning for predictive models.
    - Social network analysis of customer transactions.

- **Norsk Hydro** — **Oslo, Norway**
  Summer Intern — *June 2015–August 2015*

  - Summer internship in the Energy Markets department.
  - Developing trading strategies for energy markets. Tasks:
    - Prepare and clean data, both technical indicators and fundamental factors.
    - Use machine learning methods to generate trading recommendations.

- **If P&C Insurance** — **Oslo, Norway**
  Summer Intern — *June 2014–August 2014*

  - Summer internship in the Motor Insurance department. Tasks:
    - Analyzing trends in insurance claims.
    - Analyzing the effects of a marketing campaign.

Teaching & Invited Talks

- **Data Science Summer School** — **Paris, France**
  Teaching Assistant — *June 2018*
  I was a TA in the two-day tutorial on Approximate Bayesian Inference at the Data Science Summer School 2018.
- **Works Applications** — **Tokyo, Japan**
  Invited Talk — *May 2018*
  I gave a one-hour introduction to the field of Bayesian Deep Learning at the headquarters of Works Applications.
- **Norwegian University of Science and Technology** — **Tronhdeim, Norway**
  Teaching Assistant — *January 2013–December 2016*
  I held in total 7 teaching assistant positions in courses on statistics, calculus, finance and fluid mechanics. Tasks included weekly guidance of students as well as marking of exercises.

Extracurricular Activities

- **NeurIPS 2019**
  Reviewer — *June 2019–August 2019*
  I was a reviewer for NeurIPS 2019.
- **Bedriftskontakten Nabla** — **Tronhdeim, Norway**
  Business Contact — *April 2013–April 2014*
  I volunteered as a business contact in the student association. This work included contacting companies and organizing company presentations.
- **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.

Publications

- A. Mishkin, F. Kunstner, D. Nielsen, M. Schmidt, M.E. Khan. SLANG: Fast Structured Covariance Approximations for Bayesian Deep Learning with Natural Gradient. *NeurIPS*, 2018.
- M.E. Khan, D. Nielsen. Fast yet Simple Natural-Gradient Descent for Variational Inference in Complex Models. *ISITA*, 2018.
- M.E. Khan, D. Nielsen, V. Tangkaratt, W. Lin, Y. Gal, A. Srivastava. Fast and Scalable Bayesian Deep Learning by Weight-Perturbation in Adam. *ICML*, 2018.
- M.E. Khan, W. Lin, V. Tangkaratt, Z. Liu and D. Nielsen. Variational Adaptive-Newton Method for Explorative Learning. *ArXiv e-prints*, 2017.
- M.E. Khan, W. Lin, V. Tangkaratt, Z. Liu and D. Nielsen. Variational Adaptive-Newton Method. NIPS Workshop on Advances in Approximate Bayesian Inference, Los Angeles, USA, 2017.
- W. Lin, M.E. Khan, N. Hubacher and D. Nielsen. Natural-Gradient Stochastic Variational Inference for Non-Conjugate Structured Variational Autoencoder. ICML Workshop on Deep Structured Prediction, Sydney, Australia, 2017.
- D. Nielsen. *Tree Boosting with XGBoost - Why does XGBoost win "every" maching learning competition?* Master's Thesis, Norwegian University of Science and Technology, 2017.

Skills

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