Stas Syrota

Ph.D. Researcher in Deep Learning, Geometry, Stochastic Processes, and Bayesian Inference

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RESEARCH EXPERIENCE

January 2025 - **Ph.D. Researcher**

Department of Applied Mathematics and Computer Science, Technical University of Denmark. Main supervisor: Søren Hauberg and co-supervised by Ole Winther.

2023 – 2024 **Research Assistant**

Technical University of Denmark, Lyngby
Department of Applied Mathematics and Computer Science
Responsibilities:

- Working on uncertainty and geometry in neural networks based models using Bayesian approaches in Prof. Søren Hauberg's lab.
- Research related software development. Specifically development of matrix-free calculations based on autodifferentiation engines.

EDUCATION

2022 - 2024 **Master's Degree in Mathematical Modeling and Computation**

Department of Applied Mathematics and Computer Science, Technical University of Denmark.
Master's Thesis: "Identifiability in Latent Variable Models". Supervised by Søren Hauberg.

2020 - 2021 **Master's Degree in Statistics**

Faculty of Mathematics and Data Science, University of Copenhagen.
Selected coursework in Advanced Probability Theory and Machine Learning. Unfinished degree.

2016 – 2020 **Bachelor's Degree in Mathematics and Economics**

Faculty of Mathematics and Computer Science, University of Copenhagen
Bachelor thesis: "Financial Time Series Prediction Using Statistical and Machine Learning Methods".

PUBLICATIONS

Conference publications

- **Syrota, S.**, Zainchkovskyy, Y., Xi, J., Bloem-Reddy, B., & Hauberg, S. (2025). Identifying Metric Structures of Deep Latent Variable Models. Forty-Second International Conference on Machine Learning (ICML). Vancouver, Canada. July 13-19, 2025.
- **Syrota, S.**, Moreno-Muñoz, P. & Hauberg, S. (2024, October). Decoder ensembling for learned latent geometries. In Geometry-grounded Representation Learning and Generative Modeling Workshop (GRaM) at ICML 2024 (pp. 277-285). PMLR.

INDUSTRY EXPERIENCE

July 2021 – March 2022

Machine Learning Engineer

Unbox AI, remote
Responsibilities:

- Building recommender systems with SOTA Natural Language Processing models
- Downstream software development of data pipelines, microservices and delivery of the software product

Impact:

- Improved the accuracy of the model by 15% through improvements of data-processing and adoption of novel self-supervised training techniques
- Finalized and delivered the solution to one of the biggest grocery retail chains in Scandinavia by designing the integration architecture and building software elements to support it. The web-shop sales increased by 10% following the release of our model

November 2021 – December 2022

Data Scientist

PFA, Copenhagen
Department of AI & Analytics
Responsibilities:

- Development of a rule-based recommender system to improve the offering for pension and insurance customers
- Developing a B2B targeted product based on the recommender system to improve customer satisfaction and drive sales

Impact:

- The recommender system solution had a successful release and won the Danish Digital Award in the Customer Experience category
- B2B side of the business experienced 5% improvement in retention rate and 10% growth in new customers measured in contract valuations

February 2018 – July 2020

Student Assistant

Danish Central Bank, Copenhagen
Department of Financial Stability *(part time Feb 2018 - July 2020)* and
Department of Research *(full time Feb 2020 - July 2020)*
Responsibilities:

- Development of a bank-analysis tool. The tool encompassed the financial information connected to the five SIFIs of Denmark
- Maintenance of various SQL databases
- Research and integration of novel data sources to facilitate bank analysis
- Researching effects of COVID19 pandemic on macroeconomics of Denmark

Impact:

- The bank-analysis dashboard is still used daily in 2024 and the tool is shared with The Danish Financial Supervisory Authority

TEACHING

Teaching assistant

- **Advanced Machine Learning** taught by J. Frellsen, S. Hauberg and M. Schmidt Nørgaard at Technical University of Denmark. (Spring 2025)
- **Introduction to Machine Learning and Data Mining** taught by B. Sand Jensen and G. Arvanitidis at Technical University of Denmark. (Spring 2023, Fall 2023, Spring 2025)
- **Bayesian Machine Learning** taught by M. Riis Andersen at Technical University of Denmark. (Spring 2023)
- **Machine Learning** taught by Y. Seldin and C. Igel at University of Copenhagen. (Fall 2020)
- **Mathematical Statistics** taught by S. Lauritzen and A. Tolver at University of Copenhagen. (Spring 2019)

SKILLS

Programming languages

Python:

- Data processing and analysis tools (sklearn, pandas, numpy, plotly, matplotlib)
- Machine Learning (JAX, PyTorch, PytorchLightning, huggingface transformers library)
- General software development (APIs and packages)

R:

- Proficient in data analysis using tidyverse family of packages and statistical packages
- Extensive experience with data visualization using the Shiny environment
- Extensive knowledge and theoretical understanding of R's statistical tools

C++ and Rust: Intermediate-level skills acquired through university coursework and hobby projects

SQL: Intermediate level skills needed for Data Science related job responsibilities

Software development tools

Microsoft Azure services, Kubernetes, Docker, Git, GitHub tools for CI/CD

Languages

Ukrainian – mother tongue
English – fluent
Danish – fluent
Russian – fluent