Sophia N. Wilson

Curriculum Vitae

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Education

2025–present **PhD Fellow, Sustainable Artificial Intelligence**, *SAINTS Lab, Department of Computer Science*, University of Copenhagen (UCPH), Denmark.
Resource efficient machine learning (ML), data efficient ML, data lifecycle.

2023–2025 **Master in Computational Physics**, *Niels Bohr Institute*, UCPH, Denmark.
CGPA: 12/12. Physics-informed ML, applied ML, applied statistics, scientific programming, cosmology.

2019–2023 **Bachelor in Physics**, *Niels Bohr Institute*, UCPH, Denmark.
CGPA: 11/12. Computational physics, statistics, numerical methods, astrophysics, cosmology.

Publications

Preprints

2026 **Sophia N. Wilson**, Guðrún Fjóla Guðmundsdóttir, Andrew Millard, Raghavendra Selvan, and Sebastian Mair. Stop preaching and start practising data frugality for responsible development of ai, 2026.

2026 **Sophia N. Wilson**, Sebastian Mair, Mophat Okinyi, Erik B. Dam, Janin Koch, and Raghavendra Selvan. How hyper-datafication impacts the sustainability costs in frontier ai, 2026.

2025 **Sophia N. Wilson**, Jens Hesselbjerg Christensen, and Raghavendra Selvan. Trading carbon for physics: On the resource efficiency of machine learning for spatio-temporal forecasting, 2025.

Research Projects

Department of Computer Science, UCPH

Fall 2025 ***Costs of Data Abundance and Benefits of Data Frugality in AI***.
Led two studies: (1) quantified environmental, social, and economic costs of hyperdatafication through large-scale metadata analysis of 550,000 Hugging Face datasets and a survey examining working conditions among data workers in Kenya; (2) developed and presented recommendations promoting a data-frugal AI approach at the Rethinking AI Workshop at EurIPS 2025.

Niels Bohr Institute & Department of Computer Science , UCPH

Fall, 2024 – Spring, 2025 **Quantifying the Reduction in Carbon Footprint using Physics-Informed ML**.
Completed my MSc thesis applying physics-informed ML to reduce energy consumption in PDE simulations.

International Experience

Feb. 2026 Machine Learning Summer School hosted by Maincode in **Melbourne, Australia**.

Spring 2024 Exchange semester at the **Institute of Physics, University of Amsterdam, The Netherlands**.

Aug. 2022 Astromatic Machine Learning Summer School at the **University of Montreal, Canada**.

Aug. 2021 Nordic Optical Telescope Summer School **La Palma, Spain**.

Teaching Experience

2026 **Data Analysis and Machine Learning (for high school teachers)**, *Department of Computer Science*, Aarhus University.

2025 **Machine Learning A**, *Department of Computer Science*, UCPH.

2025 **Mathematics A**, Falkonergårdens Gymnasium.

2023 **Summer Science Camp**, Insero.

2022-23 **Mathematics for Physicists 2**, *Niels Bohr Institute*, UCPH.

2022-23 **Mathematics for Physicists 1**, *Niels Bohr Institute*, UCPH.

2020-21 **Mechanics and Special Relativity**, *Niels Bohr Institute*, UCPH.

Supervision

2026 **Co-supervising one BSc project.**.

Guest Lecturing, Workshops, and Outreach

2026 **Co-organiser and moderator at the SAINTS'26 workshop on Sustainable AI**, *SAINTS Lab, Department of Computer Science*, UCPH.

2026 **Guest-lecturing on AI, Resource Use and Sustainability**, Københavns Professionsskole.

2026 **Organiser of a workshop on Environmental Impacts of AI**, Det Åbne Gymnasium.

2025 **Presentation of current MSc thesis work at the 4th Annual Niels Bohr Institute MSc Student Symposium**, *Niels Bohr Institute*, UCPH.

2021-24 **Member of Women in Physics contributing to initiatives promoting gender balance in STEM**, *Niels Bohr Institute*, UCPH.

Invited Talks and Panel Debates

2025 **Speaker at Climate Action Day**, Copenhagen Center for Social Data Science, UCPH.

2025 **Talks about Studying Physics at UCPH**, Falkonergårdens Gymnasium.

Referees

Raghavendra Selvan
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UCPH
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