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Qualification Summary

- Researcher in adaptive statistics and ML algorithms for scalable, automated systems.
- Fosters collaboration between industry and academia through joint projects and open-source.
- Driven by solving problems—from theoretical insights to real-world applications.

Employment History

01.07.2023 – ...	<div>📌 Principal scientific developer, Equinor.</div> <div>Research</div> <div>Developing high-dimensional non-linear and non-Gaussian ensemble based data assimilation. Automatic computations and explainable updates. EnIF and triangular measure transport.</div> <div>Initiated a research collaboration with Dr Ramgraber at TU Delft</div> <div>Invited research stay at MIT UQ group</div> <div>Multiple invited talks</div> <div>Research publications and open source programming packages</div> <div>Research tested and applied in production inside Equinor</div> <div>Scientific computing team (SCOUT)</div> <div>Developing and implementing the Ensemble Information Filter for HPC.</div>
01.09.2021 – 30.06.2023	<div>📌 Senior consultant, Sonat Consulting.</div> <div>Equinor, Scientific computing team (SCOUT)</div> <div>Refactoring open-source scientific computing library towards reservoir engineering.</div> <div>Developed the GraphSPME open-source sparse precision estimation library.</div> <div>Developed the Ensemble Information Filter and Smoother algorithms.</div>
01.01.2021 – 31.12.2022	<div>📌 Adjunct Associate Professor, Department of Mathematics, University of Bergen.</div> <div>Master student supervision.</div>
01.09.2020 – 31.08.2021	<div>📌 Data scientist & Actuary, Frende Insurance.</div> <div>Translate business needs into mathematical (optimisation) problems. Find solutions in big and small data through actuarial theory, economics and statistical computations.</div> <div>Advocate version control, code-standards, packaging, CI/CD, containerisation, ...</div> <div>Introduced advanced regression techniques such as GBM and mixed effects GAM.</div>
13.06.2016 – 31.08.2017	<div>📌 Actuary, Tryg Insurance.</div> <div>Extraction, preprocessing, and analysis of large amounts of data.</div> <div>Pricing of products and analysis of customers.</div>

Employment History (continued)

01.01.2015 – 31.12.2017

■ **Teaching & Research assistant**, Department of Mathematics, University of Bergen.

Hosted the seminar series "Kaggle club" (Fall 2017).

Research/Teaching assistant in the courses Statistical learning (Fall 2017), Stochastic processes (Fall 2015), Elementary statistics (Fall 2015), Elementary calculus 2 (Fall 2015, Spring 2016).

Education

2017 – 2020

■ **Ph.D. Statistics, University of Stavanger.**

Thesis title: *Information in Local Curvature: Three Papers on Adaptive Methods in Computational Statistics.*

2014 – 2016

■ **M.Sc. Statistics & Financial Theory, University of Bergen.**

Thesis title: *Likelihood Estimation of Jump-Diffusions. Extensions from Diffusions to Jump-Diffusions, Implementation with Automatic Differentiation, and Applications.*

2011 – 2014

■ **B.Sc. Mathematics, University of Bergen.**

Project in mathematics: *Simulation of stochastic differential equations.*

2013 – 2013

■ **Academic exchange, Hong Kong University of Science and Technology.**

Skills

Languages

■ Strong reading, writing and speaking competencies for English, Norwegian, intermediate for German, studying Mandarin Chinese and Korean Hangul.

Coding

■ Python, R, SAS, C++, C#, SQL, Matlab, VBA, Dart, \LaTeX , ...

Software

■ RStudio, Spyder, VS Code, Matlab, AML-SDK, TF ...

ML Methods

■ Classification, Regression, Clustering, Model ensembling, ...

Stat. Methods

■ Time series, Likelihood estimation, SDE w. jumps, State-space models, ...

Miscellaneous Experience

Awards and Achievements

2018

■ **First prize in the technical category, AquaHack**, IBM, Deloitte, NCE seafood, NCE media, Grieg seafood, Hatch, and Bergen kommune.

2017

■ **Aktuarprisen**, Den Norske Aktuarforening.

Certification

2016

■ **Certified Actuary**. Awarded by Den Norske Aktuarforening.

Research Publications

1

Lunde, B. Å. S. (2025a). An ensemble information filter: Retrieving markov-information from the spde discretisation. *arXiv preprint arXiv:2501.09016*.

2

Blørstad, M., Lunde, B. Å. S., & Blaser, N. (2024). Stable update of regression trees. *CoRR*.

3

Lunde, B. Å. S., Curic, F., & Sortland, S. (2022). GraphSPME: Markov precision matrix estimation and asymptotic Stein-type shrinkage. *arXiv preprint arXiv:2205.07584*.

- 4 Lunde, B. Å. S., & Kleppe, T. S. (2020). agtboost: Adaptive and Automatic Gradient Tree Boosting Computations. *arXiv preprint arXiv:2008.12625*.
- 5 Lunde, B. Å. S., Kleppe, T. S., & Skaug, H. J. (2020). An information criterion for automatic gradient tree boosting. *arXiv preprint arXiv:2008.05926*.
- 6 Lunde, B. Å. S., Kleppe, T. S., & Skaug, H. J. (2018). Saddlepoint adjusted inversion of characteristic functions. *arXiv preprint arXiv:1811.05678*.
- 1 Lunde, B. Å. S. (2020c). *Information in Local Curvature: Three Papers on Adaptive Methods in Computational Statistics* (Doctoral dissertation).
- 1 Lunde, B. Å. S. (2016). *Likelihood Estimation of Jump-Diffusions. Extensions from Diffusions to Jump-Diffusions, Implementation with Automatic Differentiation, and Applications* (Master's thesis, The University of Bergen).

Selected Programming Projects

- 1 Lunde, B. Å. S. (2025b). *graphite-maps: Graph informed triangular ensemble-to-posterior maps*. Python package version 0.0.2, on PyPi. Retrieved from <https://github.com/equinor/graphite-maps>
- 2 Lunde, B. Å. S., & SCOUT-Equinor. (2022). *GraphSPME: High dimensional precision matrix estimation with a known graphical structure*. C++, R and Python package version 0.0.1. Retrieved from <https://github.com/equinor/GraphSPME>
- 3 Lunde, B. Å. S. (2020a). *agtboost: Adaptive and Automatic Gradient Boosting Computations*. R package version 0.9.1. Retrieved from <https://github.com/blunde1/agtboost>
- 4 Lunde, B. Å. S. (2020b). *dgumbel: The Gumbel Distribution Functions and Gradients*. R package version 1.0.1. Retrieved from <https://github.com/blunde1/dgumbel>

Conferences, Workshops, Seminars and Talks

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| 2025 | The machine learning seminar, UiB "Towards consistent ensemble based data assimilation"
dScience Lunch Seminar, UiO "Towards consistent ensemble based data assimilation"
MIT research stay, UQ group seminar "Towards consistent ensemble based data assimilation at scale"
SIAM CSE25 mini symposium "Scalable Ensemble-Based Inversion Using Structure from SPDE Models" |
| 2024 | The Ensemble Kalman Filter Workshop 2024, invited speaker "Linear Triangular Transport at Scale".
DA Seminar - NORCE/NERSC "Graph Informed Linear-Triangular Transport"
Data assimilation group meeting - TU Delft "Graph Informed Linear-Triangular Transport". |
| 2023 | Make Data Smart "Assimilating Data Locally". |
| 2022 | The Ensemble Kalman Filter Workshop 2022, invited speaker "Graphical sparse precision matrix estimation and the ensemble information filter". Talk: https://www.youtube.com/watch?v=MVOGqaock8g&t=95s . |

Conferences, Workshops, Seminars and Talks (continued)

- 2021 **The stochastics seminar, University of Bergen.** Held the presentation "Adaptive machine-learning through asymptotics and information criteria".
Guest lecture, Norwegian University of Science and Technology. Lectured about gradient boosting in the course MA8701 Advanced statistical methods in inference and learning.
- 2020 **Combined CEDAS and the stochastics seminar, University of Bergen.** Held the presentation "An information criterion for automatic gradient tree boosting".
Statistics seminar, University of Alberta. Held the presentation "An information criterion for automatic gradient tree boosting".
Guest lecture, Statistical Learning, University of Bergen. Lectured about gradient boosting.
- 2019 **EcoSta, 3rd International Conference on Econometrics and Statistics, Taiwan** Attended with presentation titled "Information criteria for gradient boosted trees: Adaptive tree size and early stopping".
Big Insight seminar Held the presentation "An information criterion for gradient boosted trees".
The stochastics seminar, University of Stavanger Held the presentation "An information criterion for gradient boosted trees".
- 2018 **EcoSta, 2nd International Conference on Econometrics and Statistics, Hong Kong** Attended with presentation titled "Saddlepoint adjusted inversion of characteristic functions".
Statistikkundervisning: fortid, natid og fremtid, University of Bergen, Attended with presentation titled "Information efficient gradient tree boosting".
Den Norske Aktuarforening, Talk titled "Finance in the frequency domain".
Bergen Machine Learning Meetup, Talk titled "Information efficient gradient tree boosting".
Frende Insurance, Talk titled "Boosting i forsikring".
- 2017 **Aktuarfokus.** Attended with presentation titled "Estimation of Jump-Diffusions".

Student Supervision

- 2025 – . . . **John Noynay** PhD candidate at TU Delft. Co-supervisor in data assimilation. Starting July 2025
- 2024 – . . . **Patricia Kappler** PhD candidate at TU Delft. Co-supervisor in data assimilation
- 2023 – . . . **Morten Blørstad** PhD candidate in Computer Science, UiB, co-supervisor
Master's student in Computer Science, UiB (2021-2023) - Stability of machine learning models for claim frequency estimation, co-supervisor
- 2019 – 2021 **Eirik Lund Rikstad** Master's student in statistics, UiB. Co-supervisor on algorithms for automatic gradient tree boosting

References

Available on Request