

Berent Ånund Strømnes Lunde, Ph.D.

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Qualification Summary

- Statistics and machine-learning researcher focusing on data-adaptive algorithms.
- Certified and award winning actuary with strong analytical and technical skills.
- Proficiency in combining Python, R, SQL, SAS and C++ for quantitative purposes.

Employment History

- 2021 –
- 📌 **Senior consultant**, Sonat Consulting.
Equinor, Scientific computing team (SCOUT)
Refactoring open-source scientific computing library towards reservoir engineering.
Developed the GraphSPME open-source sparse precision estimation library.
Developed the Ensemble Information Filter and Smoother algorithms.
 - 📌 **Associate Professor II**, Department of Mathematics, University of Bergen.
Research: Developing information theory for automatic ML-algorithms
Teaching and seminars: Course development for actuarial and data-science courses.
Master student supervision.
- 2020 – 2021
- 📌 **Data scientist & Actuary**, Frende Insurance.
Tech-lead on internal MLOps project.
Translate business needs into mathematical (optimization) problems. Find solutions in big and small data through actuarial theory, economics and statistical computations.
Advocate version control, code-standards, packaging, CI/CD, containerisation, ...
Introduced advanced regression techniques such as GBM and mixed effects GAM.
- 2016 – 2017
- 📌 **Actuary**, Tryg Insurance.
Extraction, preprocessing, and analysis of large amounts of data.
Pricing of products and analysis of customers.
- 2015 – 2017
- 📌 **Teaching & Research assistant**, Department of Mathematics, University of Bergen.
Hosted the seminar series "Kaggle club".
Research/Teaching assistant in the courses Statistical learning, Stochastic processes, Elementary statistics, Elementary calculus 2.

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, \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

Journal Articles

- 1 Lunde, B. Å. S., & Kleppe, T. S. (2020). agtboost: Adaptive and Automatic Gradient Tree Boosting Computations. *arXiv preprint arXiv:2008.12625*.
- 2 Lunde, B. Å. S., Kleppe, T. S., & Skaug, H. J. (2020). An information criterion for automatic gradient tree boosting. *arXiv preprint arXiv:2008.05926*.
- 3 Lunde, B. Å. S., Kleppe, T. S., & Skaug, H. J. (2018). Saddlepoint adjusted inversion of characteristic functions. *arXiv preprint arXiv:1811.05678*.

Doctoral Theses

- 1 Lunde, B. Å. S. (2020c). *Information in Local Curvature: Three Papers on Adaptive Methods in Computational Statistics* (Doctoral dissertation).

Master's Theses

- 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).

Published Programming Packages

CRAN Packages

- 1 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](https://github.com/blunde1/agtboost)
- 2 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](https://github.com/blunde1/dgumbel)

Conferences, Workshops, Seminars and Talks

- 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

- Eirik Lund Rikstad, Master's student in statistics, UiB – Sampling algorithms for automatic gradient tree boosting, co-supervisor.
- Morten Blørstad, Master's student in Computer Science, UiB - Stability of machine learning models for claim frequency estimation, co-supervisor.

References

Available on Request