Joel Daniel Andersson

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Research interests

Differential privacy, online algorithms, streaming algorithms, linear algebra

Education

2022- PH.D. in Computer Science, University of Copenhagen
Topic: *differentially private algorithms under continual observation*
Advisor: *Rasmus Pagh*
Expected thesis hand-in date: August 31st 2025

2020 M.SC. in Engineering Physics, Lund University
GPA: 3.93 / 4.0
Relevant coursework: algorithms, optimization, linear algebra, real analysis, combinatorics

2017-2018 Exchange year. University of California, San Diego
Formally enrolled as a CS student. Studied algorithms, complexity and probability theory.

Professional experience

2020-2022 Ericsson AB – Lund, Sweden
Software Engineer
Implemented protocols in C for the 5G Physical Layer in base stations.

2019-2020 CERN – Geneva, Switzerland
Technical Student (salaried 14-month internship while writing my master's thesis)
Designed a framework in Python for first-order closed orbit analysis in synchotrons.

2018 CERN – Geneva, Switzerland
openlab Summer Student
Systematized the comparison of beam tracking codes and fixed identified bugs.

2016, 2017 Qlik AB – Lund, Sweden
Summer Software Engineering Intern
Revamped a test framework and automated documentation generation.

Grants, honours & awards

2017 Gull & Stellan Ljungberg Foundation Scholarship
2014 Hvitfeldtska Trust Scholarship
2014 Honorable mention in International Physics Olympiad
2014 Fifth place in Wallenberg (Swedish national) Physics Price Competition

Publications

Authors are listed in alphabetical order by default. First-authors who are first by contribution have a "*" next to their name.

Peer-reviewed publications

2025 7. **Private Lossless Multiple Release**
J. D. A.*, Lukas Retschmeier, Boel Nelson, Rasmus Pagh.
Accepted to International Conference on Machine Learning (ICML), 2025.
[arXiv]

6. **Count on Your Elders: Laplace vs Gaussian Noise**
J. D. A., Rasmus Pagh, Teresa Anna Steiner, Sahel Torkamani.
Accepted to Symposium on Foundations of Responsible Computing (FORC), 2025.
[arXiv]

5. **Streaming Private Continual Counting via Binning**
J. D. A., Rasmus Pagh.
IEEE Conference on Secure and Trustworthy Machine Learning (SaTML), 2025.
[arXiv] [proceedings]

2024 4. **Continual Counting with Gradual Privacy Expiration**
J. D. A., Monika Henzinger, Rasmus Pagh, Teresa Anna Steiner, Jalaj Upadhyay.
Conference on Neural Information Processing Systems (NeurIPS), 2024.
[arXiv] [proceedings] [poster + 5 min video]

2023 3. **A Smooth Binary Mechanism for Efficient Private Continual Observation**
J. D. A., Rasmus Pagh.
Conference on Neural Information Processing Systems (NeurIPS), 2023.
[arXiv] [proceedings] [poster + 5 min video]

2019 2. **SixTrack V and Runtime Environment**
Riccardo De Maria* et al.
International Journal of Modern Physics A 34 (36), 2019.
[article]

1. **SixTrack Version 5: Status and New Developments**
Riccardo De Maria* et al.
Journal of Physics: Conference Series 1350 (1), 2019.
[article]

Non-peer-reviewed publications

2025 · **On the Space Complexity of Online Convolution**
J. D. A., Amir Yehudayoff.
Preprint under review. [arxiv]

2020 · **Orbit Correction Studies on the HL-LHC Layout and Optics V1.5**
J. D. A., Riccardo De Maria, Davide Gamba.
Technical report, CERN. [link]

· **A Linear Framework for Orbit Correction in the HL-LHC**
J. D. A. (advisors: Davide Gamba and Alexandros Sopasakis).
Master's thesis, Lund University. [link]

Talks

2025 · Presenting a paper at **FORC 2025**, June 5 2025.
15 minute talk on *Count on Your Elders: Laplace vs Gaussian Noise*.

· Invited talk at the **Boston University Security Seminar**, April 2, 2025.
45-minute talk on *Streaming Private Continual Counting via Binning*.

· Invited talk at the **Google Privacy Seminar** hosted by Thomas Steinke, February 12, 2025.
45-minute talk on *Streaming Private Continual Counting via Binning*.

2023 · Talk at **ARCO 2023**, November 24, 2023.
20-minute talk on *A Smooth Binary Mechanism for Efficient Private Continual Observation*.

· Invited talk at the **Google Privacy Seminar** hosted by Thomas Steinke, August 30, 2023.
45-minute talk on *A Smooth Binary Mechanism for Efficient Private Continual Observation*.

Teaching

2022-2025 Teaching assistant for the first-year graduate class in algorithms: Advanced Algorithms and Data Structures (AADS) at the University of Copenhagen. Responsibilities included leading exercise classes, preparing the exam and grading hand-ins. [course description]

Academic service

2025 · Reviewer for ICML 2025 and Journal of Artificial Intelligence Research (JAIR).

2023 · Organized the biannual ARCO (Algorithmic Research Cooperation around Øresund) event at University of Copenhagen together with Jacob Holm. [homepage]

Media appearances

2024 · Media article(s) on *A Smooth Binary Mechanism for Efficient Private Continual Observation*. English press release from KU, and Danish article in Dagens Pharma.

2023 · Contributed to SCIENC KU's *Christmas Calendar*. Recorded a 1-minute video, sketching out a connection between Traveling Salesman and Santa's predicament around Christmas.

Other skills

Coding	Python, C, C++, Java, MATLAB, LaTeX, bash, git
Languages	Swedish (*native*), English (*fluent*), Danish (*B2*), French (*B1*)
Running	5 kilometers (19:15), half-marathon (1:35:31), marathon (3:32:57)

Last updated: May 29, 2025