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Joel Daniel Andersson

Education

9/2022 - present **DIKU, University of Copenhagen**, *Ph.D. Student in Computer Science*
Researching into differentially private algorithms under the supervision of Prof. Rasmus Pagh.

9/2014 - 12/2019 **Lund University**, *M.Sc. Engineering Physics*, GPA: 3.93/4
Relevant coursework: Convex Optimization, Matrix Theory, Combinatorics, Numerical Linear Algebra, Randomized Algorithms, Complexity Theory, Machine Learning.

9/2017 - 6/2018 **University of California, San Diego**, *Exchange Student*, Provost Honors
Exchange year spent abroad as a Computer Science Major focusing on Theoretical CS.

Academic Experience

2/2019 - 4/2020 **CERN**, *Technical Student (Master's Thesis)*, Geneva, Switzerland
- wrote a Python package for first-order closed orbit analysis in HL–LHC; conducted studies inside framework to ascertain performance of beam sensors, orbit feedback system and verification of orbit corrector budget
- studied beam dynamics and accelerator physics; derived response matrices for closed orbit perturbation sources in synchotrons; formulated the orbit corrector budget as a convex optimization problem and solved it; analyzed LHC data to verify framework consistency
- presented studies as part of the HL–LHC project; produced technical reports and thesis

6/2018 - 8/2018 **CERN**, *Openlab Summer Intern*, Geneva, Switzerland
- evaluated numerical and modelling differences between different beam tracking codes used for design studies of accelerators at CERN
- systematized comparisons in new Python framework; corrected tracking source code
- produced report on tracking code validity; built testing tools for developers

Vocational Experience

11/2020 - 8/2022 **Ericsson**, *5G Software Engineer*, Lund, Sweden
- implemented protocols for the 5G Physical Layer in base stations
- contributed to opportunity analysis for new 5G features; constructed solutions in C and Assembly code; collaborated within an agile self-organized developer team; also collaborated internationally with developer teams in Beijing and Ottawa
- delivered prioritized 5G capabilities to meet telecom companies' demands; optimized existing C algorithms to maintain Ericsson's competetive edge

6/2017 - 8/2017 **Qlik R&D**, *Software Engineer*, Lund, Sweden
- built a new system for autogenerating documentation from engine code in IDL format
- designed markup language for documentation; integrated autogeneration process into compiler
- reduced overall time spent on documentation; created technical manual; instructed documentation team in usage of new system

6/2016 - 8/2016 **Qlik R&D**, *Software Engineer*, Lund, Sweden
- evaluated and revamped testing framework of the computation engine
- constructed new testing units in C#; upgraded previous testing system
- increased test coverage; identified and fixed bugs in previous system

Programming Skills

Languages **Python, C, C++, MATLAB, Java, Assembly, LaTeX**
Software **bash, git, Linux Systems, VIM, JIRA**

Languages

English **Fluent**
Swedish **Native**
French **B1**
Danish **B2**

Awards

2018 **Provost Honors for Exchange Year at UCSD**
2017 **Gull & Stellan Ljungberg Foundation Scholarship**
2014 **Hvitfeldtska Trust Scholarship**
2014 **Honorable Mention in IPhO (International Physics Olympiad) 2014**
2014 **5th place in Wallenberg Physics Price Competition**

Standardized Tests

GRE **167/170 Verbal, 167/170 Quantitative** *(October 23rd, 2020)*
TOEFL iBT **115/120** *(October 21st, 2020)*

TCS Publications

2024 Joel Daniel Andersson, Monika Henzinger, Rasmus Pagh, Teresa Anna Steiner, and Jalaj Upadhyay. *Continual Counting with Gradual Privacy Expiration*. NeurIPS 2024. arXiv: 2406.03802 [cs.CR]. URL: https://arxiv.org/abs/2406.03802.

Joel Daniel Andersson and Rasmus Pagh. *Streaming Private Continual Counting via Binning*. To appear at SaTML 2025. arXiv: 2412.07093 [cs.LG]. URL: https://arxiv.org/abs/2412.07093.

Joel Daniel Andersson, Rasmus Pagh, Teresa Anna Steiner, and Sahel Torkamani. *Count on Your Elders: Laplace vs Gaussian Noise*. arXiv: 2408.07021 [cs.CR]. URL: https://arxiv.org/abs/2408.07021.

2023 Joel Daniel Andersson and Rasmus Pagh. "A Smooth Binary Mechanism for Efficient Private Continual Observation". In: *Advances in Neural Information Processing Systems 36: Annual Conference on Neural Information Processing Systems 2023, NeurIPS 2023, New Orleans, LA, USA, December 10 - 16, 2023*. Ed. by Alice Oh, Tristan Naumann, Amir Globerson, Kate Saenko, Moritz Hardt, and Sergey Levine. URL: http://papers.nips.cc/paper%5C_files/paper/2023/hash/99c41fb9fd53abfdd4a0259560ef1c9d-Abstract-Conference.html.