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Joel Daniel Andersson

Education

- 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.
- 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.

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 competitive 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**

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*)

Publications

- 2023 Joel Daniel Andersson and Rasmus Pagh. "A Smooth Binary Mechanism for Efficient Private Continual Observation". In: *To appear in NeurIPS'23* abs/2306.09666. DOI: 10.48550/arXiv.2306.09666. arXiv: 2306.09666. URL: <https://doi.org/10.48550/arXiv.2306.09666>.
- 2020 Joel Daniel Andersson, Riccardo De Maria, and Davide Gamba. "Orbit Correction Studies on the HL-LHC Layout and Optics V1.5". In: URL: <https://cds.cern.ch/record/2731920>.
- 2019 Joel Daniel Andersson. "A Linear Framework for Orbit Correction in the High-Luminosity Large Hadron Collider". In: *Master's Theses in Mathematical Sciences*. ISSN: 1404-6342. URL: <http://lup.lub.lu.se/student-papers/record/8998721>.

R. De Maria et al. "SixTrack Version 5: Status and New Developments". In: *Proc. 10th International Particle Accelerator Conference (IPAC'19), Melbourne, Australia, 19-24 May 2019* (Melbourne, Australia). International Particle Accelerator Conference 10. Geneva, Switzerland: JACoW Publishing, pp. 3200–3203. ISBN: 978-3-95450-208-0. URL: <https://accelconf.web.cern.ch/ipac2019/papers/wepts043.pdf>.
- 2018 R. De Maria et al. "SixTrack Project: Status, Runtime Environment, and New Developments". In: *Proc. 13th International Computational Accelerator Physics Conference (ICAP'18), Key West, FL, USA, 20-24 October 2018* (Key West, FL, USA). International Computational Accelerator Physics Conference 13. Geneva, Switzerland: JACoW Publishing, pp. 172–178. ISBN: 978-3-95450-200-4. URL: <https://accelconf.web.cern.ch/icap2018/papers/tupaf02.pdf>.