

# ANDERS AAMAND

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## CURRENT EMPLOYMENT

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**University of Copenhagen, BARC**

Postdoctoral Researcher

*March 2024 - Present*

## PAST EMPLOYMENT

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**MIT, Electrical Engineering and Computer Science**

Postdoctoral Researcher in Piotr Indyk's group

*August 2021 - January 2024*

**University of Copenhagen, BARC**

Postdoctoral Researcher

*September 2020 - July 2021*

## EDUCATION

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**University of Copenhagen, BARC**

PhD student within algorithms.

Supervisor: Mikkel Thorup and Mikkel Abrahamsen

Phd degree awarded in October 2020

*September 2017 - August 2020*

**University of Copenhagen**

Master of Mathematics

GPA: 12.

*September 2016 - August 2017*

**University of Cambridge, Clare Hall**

Master of Advanced Study (Part III of the Mathematical Tripos)

Supervisor: Imre Leader.

Final exam result: Pass with Distinction

*October 2015 - June 2016*

**University of Copenhagen**

Bachelor of Mathematics

GPA: 11.75

*September 2012 - June 2015*

## GRANTS HELD

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- International Postdoc Grant 0164-00022B from the Independent Research Fund Denmark *2020*
- Elite Research Travel Grant, Ministry of Higher Education and Science *2019*

## PUBLICATIONS

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1. Anders Aamand, Alexandr Andoni, Justin Y. Chen, Piotr Indyk, Shyam Narayanan, Sandeep Silwal, and Haike Xu. Statistical-computational trade-offs for density estimation. In *NeurIPS*, 2024
2. Anders Aamand, Justin Y. Chen, Huy Lê Nguyen, Sandeep Silwal, and Ali Vakilian. Improved frequency estimation algorithms with and without predictions. In *NeurIPS*, 2023 (**Spotlight**)
3. Anders Aamand, Justin Y. Chen, Allen Liu, Sandeep Silwal, Pattara Sukprasert, Ali Vakilian, and Fred Zhang. Constant approximation for individual preference stable clustering. In *NeurIPS*, 2023 (**Spotlight**)

4. Anders Aamand, Alexandr Andoni, Justin Y. Chen, Piotr Indyk, Shyam Narayanan, and Sandeep Silwal. Data structures for density estimation. In *Proceedings of the 40th International Conference on Machine Learning*, volume 202 of *Proceedings of Machine Learning Research*, pages 1–18, 2023
5. Anders Aamand, Mikkel Abrahamsen, Peter M. R. Rasmussen, and Thomas D. Ahle. Tiling with squares and packing dominos in polynomial time. *ACM Trans. Algorithms*, 19(3):30:1–30:28, 2023
6. Anders Aamand, Adam Karczmarz, Jakub Lacki, Nikos Parotsidis, Peter M. R. Rasmussen, and Mikkel Thorup. Optimal decremental connectivity in non-sparse graphs. In *50th International Colloquium on Automata, Languages, and Programming, ICALP 2023*, volume 261 of *LIPIcs*, pages 6:1–6:17, 2023
7. Anders Aamand, Mikkel Abrahamsen, Lorenzo Beretta, and Linda Kleist. Online sorting and translational packing of convex polygons. In *Proceedings of the 2023 ACM-SIAM Symposium on Discrete Algorithms, SODA, 2023*, pages 1806–1833. SIAM, 2023
8. Anders Aamand, Debarati Das, Evangelos Kipouridis, Jakob Bæk Tejs Knudsen, Peter M. R. Rasmussen, and Mikkel Thorup. No repetition: Fast and reliable sampling with highly concentrated hashing. *Proc. VLDB Endow.*, 15(13):3989–4001, 2022
9. Anders Aamand, Noga Alon, Jakob Bæk Tejs Houen, and Mikkel Thorup. On sums of monotone random integer variables. *Electronic Communications in Probability*, 27(none):1 – 8, 2022
10. Anders Aamand, Justin Y. Chen, and Piotr Indyk. (optimal) online bipartite matching with degree information. In *NeurIPS*, 2022
11. Anders Aamand, Justin Y. Chen, Piotr Indyk, Shyam Narayanan, Ronitt Rubinfeld, Nicholas Schiefer, Sandeep Silwal, and Tal Wagner. Exponentially improving the complexity of simulating the weisfeiler-lehman test with graph neural networks. In *NeurIPS*, 2022
12. Anders Aamand, Jakob Bæk Tejs Knudsen, and Mikkel Thorup. Load balancing with dynamic set of balls and bins. In *53rd Annual ACM SIGACT Symposium on Theory of Computing, STOC 2021*, pages 1262–1275. ACM, 2021
13. Anders Aamand, Mikkel Abrahamsen, Jakob Bæk Tejs Knudsen, and Peter Michael Reichstein Rasmussen. Classifying convex bodies by their contact and intersection graphs. In *37th International Symposium on Computational Geometry, SoCG 2021*, volume 189 of *LIPIcs*, pages 3:1–3:16, 2021
14. Anders Aamand, Jakob Bæk Tejs Knudsen, Mathias Bæk Tejs Knudsen, Peter Michael Reichstein Rasmussen, and Mikkel Thorup. Fast hashing with strong concentration bounds. In *Proceedings of the 52nd Annual ACM SIGACT Symposium on Theory of Computing, STOC 2020*, pages 1265–1278. ACM, 2020
15. Anders Aamand and Mikkel Thorup. Non-empty bins with simple tabulation hashing. In *Proceedings of the Thirtieth Annual ACM-SIAM Symposium on Discrete Algorithms, SODA 2019*, pages 2498–2512, 2019
16. Anders Aamand, Mathias B. T. Knudsen, and Mikkel Thorup. Power of  $d$  choices with simple tabulation. In *45th International Colloquium on Automata, Languages, and Programming, ICALP 2018*, pages 5:1–5:14, 2018
17. Anders Aamand, Niklas Hjuler, Jacob Holm, and Eva Rotenberg. One-way trail orientations. In *45th International Colloquium on Automata, Languages, and Programming, ICALP 2018*, pages 6:1–6:13, 2018
18. Anders Aamand, Mikkel Abrahamsen, and Mikkel Thorup. Disks in curves of bounded convex curvature. *Am. Math. Mon.*, 127(7):579–593, 2020

## CONFERENCE AND WORKSHOP PRESENTATIONS

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- **SODA 2023** Online Sorting and Translational Packing of Convex Polygons
- **FSTTCS 2022 Workshop** (Optimal) Online Bipartite Matching with Degree Information
- **STOC 2021** Load Balancing with Dynamic Set of Balls and Bins
- **SODA 2019** Non-Empty Bins with Simple Tabulation Hashing
- **ICALP 2018** Power of  $d$  Choices with Simple Tabulation

## POSTER PRESENTATIONS

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- **NeuIPS 2023** Joint Presentation: Improved Frequency Estimation Algorithms with and Without Predictions
- **NeuIPS 2023** Joint Presentation: A Constant-Factor Approximation for Individual Preference Stable Clustering
- **ICML 2023** Joint Presentation: Data Structures for Density Estimation
- **NeuIPS 2022** Joint Presentation: Exponentially Improving the Complexity of Simulating the Weisfeiler-Lehman Test with Graph Neural Networks
- **NeuIPS 2022** Joint Presentation: (Optimal) Online Bipartite Matching with Degree Information
- **STOC 2021** Presentation: Load Balancing with Dynamic Set of Balls and Bins

## TEACHING EXPERIENCE

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- Course organizer of *Topics in Algorithms and Complexity* (UCPH, DIKU) 2024
- Guest lecturer at course on differential privacy in distributed settings (UCPH, DIKU) 2024
- Guest lecturer at seminar on spectral expansion (UCPH, DIKU) 2019
- Guest lecturer at seminar on similarity search (UCPH, DIKU) 2018
- Guest lecturer in *Topics in Algorithms and Data Structures* (UCPH, DIKU) 2018
- Teaching assistant in *Advanced Algorithms and Data Structures* (UCPH, DIKU) 2018
- Teaching assistant at various courses within discrete mathematics, probability and statistics, geometry, analysis, and linear algebra (UCPH, MATH) 2012-2017
- Mathematics teacher at Danish High School *Ingrid Jespersens Gymnasieskole* 2013-2014

## FORMAL PEDAGOGICAL TRAINING

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- Attended *Introduction to University Pedagogy* (UCPH, DIKU) 2020

## ACHIEVEMENTS

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- Participated in the International Mathematical Olympiad as part of the Danish national team 2011

## SCIENTIFIC STAYS ABROAD

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- Visiting PhD student at Massachusetts Institute of Technology, CSAIL.  
Supervisor: Piotr Indyk. March 2019 - May 2019
- Visiting PhD student at Columbia University, DSI.  
Supervisor: Alexandr Andoni. June 2019 - September 2019

- Visiting PhD student at the University of Cambridge.  
Supervisor: Imre Leader.

*December 2019*

## **OTHER PROFESSIONAL ACTIVITIES**

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- Program committee member at SWAT'24
- Reviewer for conferences and journals: NeurIPS, ICML, JACM, STOC, SODA,ICALP, SoCG, CPM.

## **LANGUAGE SKILLS**

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- Danish: Native
- English: Fluent
- French: Intermediate