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Positions

- 1/10/2023– present **Assistant Professor (tenure-track),**
DIVISION OF THEORETICAL COMPUTER SCIENCE
Department of Computer Science, School of Electrical Engineering and Computer Science
KTH ROYAL INSTITUTE OF TECHNOLOGY, Stockholm, Sweden
- 1/05/2021– **Postdoc,**
30/09/2023 BASIC ALGORITHMS RESEARCH COPENHAGEN (BARC)
Department of Computer Science
IT UNIVERSITY OF COPENHAGEN, Copenhagen, Denmark
Host: Thore Husfeldt
- 1/09/2018– **Postdoc,**
30/04/2021 School of Electrical Engineering
TEL AVIV UNIVERSITY, Tel Aviv, Israel
Host: Guy Even

Education

- 03/09/2013– **Ph.D. in Computer Science,**
17/08/2018 UNIVERSITY OF MARYLAND, College Park, MD, USA
Thesis: *Approximation Algorithms for Geometric Clustering and Touring Problems*
Advisor: Samir Khuller
- 30/08/2010– **M.Sc. in Computer Science,**
19/05/2013 UNIVERSITY OF MARYLAND, College Park, MD, USA
Advisor: Aravind Srinivasan
- 25/09/2006– **B.Sc. in Mathematics (Honors) and B.Sc. in Computer Science,**
12/06/2010 UNIVERSITY OF CHICAGO, Chicago, IL, USA
Four-year scholarship

Research Interests

Data Structures, Computational Geometry, Randomized and Approximation Algorithms

Refereed Conference Articles (Author Order Alphabetical)

- SWAT'24 **Daisy Bloom Filters**
Ioana O. Bercea, Jakob Bæk Tejs Houen, Rasmus Pagh
In: *19th Scandinavian Symposium and Workshops on Algorithm Theory, (SWAT)*
- FOCS'23 **Locally Uniform Hashing**
Ioana O. Bercea, Lorenzo Beretta, Jonas Klausen, Jakob Bæk Tejs Houen, Mikkel Thorup
In: *64th IEEE Symposium on Foundations of Computer Science, (FOCS)*
- SIGMOD'23 **InfiniFilter: Expanding Filters to Infinity and Beyond**
Niv Dayan, Ioana O. Bercea, Pedro Reviriego, Rasmus Pagh
(authors in order of contribution)
In: *International Conference on Management of Data, (SIGMOD)*

- STOC'22 **An Extendable Data Structure for Incremental Stable Perfect Hashing**
Ioana O. Bercea, Guy Even
In: *54th Annual ACM Symposium on Theory of Computing*, (**STOC**)
- WADS'21 **Dynamic Dictionaries for Multisets and Counting Filters with Constant Time Operations**
Ioana O. Bercea, Guy Even
In: *17th Algorithms and Data Structures Symposium*, (**WADS**)
Invited to the special issue of [Algorithmica](#)
- CIAC'21 **Upper Tail Analysis of Bucket Sort and Random Tries**
Ioana O. Bercea, Guy Even
In: *12th International Conference on Algorithms and Complexity*, (**CIAC**)
Invited to the special issue of [Theoretical Computer Science](#)
- SWAT'20 **A Dynamic Space-Efficient Filter with Constant Time Operations**
Ioana O. Bercea, Guy Even
In: *17th Scandinavian Symposium and Workshops on Algorithm Theory*, (**SWAT**) , pp. 11:1-11:17
- APPROX'19 **On the cost of essentially fair clusterings**
Ioana O. Bercea, Martin Groß, Samir Khuller, Aounon Kumar, Clemens Rösner, Daniel R. Schmidt, Melanie Schmidt
In: *22nd International Workshop on Approximation Algorithms for Combinatorial Optimization Problems*, (**APPROX**), pp. 18:1-18:22
- CCCG'18 **Improved Bounds for the Traveling Salesman Problem with Neighborhoods on Uniform Disks**
Ioana O. Bercea
In: *30th Canadian Conference on Computational Geometry*, (**CCCG**), pp.129-141
- CCCG'16 **Minimizing Uncertainty through Sensor Placement with Angle Constraints**
Ioana O. Bercea, Volkan Isler, Samir Khuller
In: *28th Canadian Conference on Computational Geometry*, (**CCCG**), pp. 287-294
- SPAA'14 **On Computing Maximal Independent Sets of Hypergraphs in Parallel**
Ioana O. Bercea, Navin Goyal, David G. Harris, Aravind Srinivasan
In: *26th ACM Symposium on Parallelism in Algorithms and Architectures*, (**SPAA**), pp. 42-50
Invited to the special issue of [TOPC](#)

In Submission

- 2024 **Aleph Filter: To Infinity in Constant Time**
Niv Dayan, Ioana O. Bercea , Rasmus Pagh
(*authors in order of contribution*)

Journal Articles

- 2022 **Dynamic Dictionaries for Multisets and Counting Filters with Constant Time Operations**
Ioana O. Bercea, Guy Even
In: *Algorithmica*, Special issue on WADS 2021
- 2021 **Upper Tail Analysis of Bucket Sort and Random Tries**
Ioana O. Bercea, Guy Even
In: *Theoretical Computer Science*, Special issue on CIAC 2021
- 2016 **On Computing Maximal Independent Sets of Hypergraphs in Parallel**
Ioana O. Bercea, Navin Goyal, David G. Harris, Aravind Srinivasan
In: *ACM Transactions on Parallel Computing*, Special issue on SPAA 2014

Invited Workshops

- July 2024 *Algorithms and Data Structures Today: New Techniques, New Problems, New Challenges*

- May 2023 DAGSTUHL SEMINAR: *Scalable Data Structures*
- March 2023 NII SHONAN MEETING: *New Frontiers in Locality in Computation*
- Feb. 2021 DAGSTUHL SEMINAR: *Scalable Data Structures*
- Oct. 2019 IGAFIT: *Workshop for Postdoctoral Researchers in Algorithms*
- Sept. 2019 GI-DAGSTUHL SEMINAR: *Algorithms for Big Data*
- March 2019 DAGSTUHL SEMINAR: *Theoretical Foundations of Storage Systems*
- Jan. 2019 DAGSTUHL SEMINAR: *Data Structures for the Cloud and External Memory Data*
- Oct. 2018 *7th French-Israeli Workshop on Foundations of Computer Science*

Invited Talks

- July 2023 ROMANIAN ALGORITHMS DAYS

Mentoring

- 2021- **Jonas Østergaard Klausen**
PhD, UNIVERSITY OF COPENHAGEN
co-supervised with Mikkel Thorup, Jacob Holm
- Spring 2023 **Jens Birk Andersen, Malthe Mathias Mølgaard Larsen**
BSc Thesis, IT UNIVERSITY OF COPENHAGEN
co-supervised with Martin Aumüller

Teaching

- Fall 2023 – **Course Responsible, Teacher for DD2440 Advanced Algorithms, MSc,**
KTH ROYAL INSTITUTE OF TECHNOLOGY, Department of Computer Science
- Summer 2022 **Co-Instructor for Algorithms and Data Structures BSc, MSc,**
& 2023 IT UNIVERSITY OF COPENHAGEN, Department of Computer Science
- Spring 2016 **Co-Instructor for CMSC 122: Intro to Computer Programming via the Web,**
UNIVERSITY OF MARYLAND, Department of Computer Science
- 2010–2018 **Graduate Teaching Assistant,**
UNIVERSITY OF MARYLAND, Department of Computer Science
D = Leading discussion sections, presenting new material, reviewing, quizzes, grading, office hours; G = Grading and office hours
CMSC 250: Discrete Structures,
Fall 2011(D), Spring 2014(D), Spring 2015(D), Fall 2015(D), Fall 2016(D), Spring 2017(G)
CMSC 131/132: Object Oriented Programming I, II,
Fall 2010 (D), Fall 2013(D), Spring 2018(G)
CMSC 216: Introduction to Computer Systems,
Spring 2011(G), Summer 2011(D)
CMSC 351: Introduction to Algorithms,
Spring 2012(G)
CMSC 122: Intro to Computer Programming via the Web,
Fall 2017(G)
- 2009–2010 **Junior Tutor for Elementary Functions and Analysis 1,2,3,**
UNIVERSITY OF CHICAGO, Mathematics Department

Honors and Awards

- 2023 **Future Digileader,** DIGITAL FUTURES
- 2014–2015 **Outstanding Graduate Assistant Award,** UNIVERSITY OF MARYLAND
Top 2% of all UMD Graduate Assistants

- 2010–2012 **Dean's Fellowship**, UNIVERSITY OF MARYLAND
- 2006–2008, **Dean's List**, UNIVERSITY OF CHICAGO
- 2009–2010
- 2006–2010 **Scholarship**, UNIVERSITY OF CHICAGO
Tuition, housing and stipend (unconditioned on GPA)
- 2001–2006 **Romanian National Mathematics Olympiad**
Bronze medals in the National Olympiad, Top 3 prizes in national and regional contests

Service

Program Committee co-chair SOSA 2025

Program Committee RANDOM 2024, ISAAC 2024, SOSA 2024, ICDCN 2020

Session Chair HALG 2022

Journal Reviewer *Transactions on Computers, European Journal of Operational Research, Theoretical Computer Science, Networks, ACM Transactions on Sensor Networks, The Visual Computer*

Conference Reviewer

2024 FOCS, STOC, SODA, ICALP, ITCS, SWAT, SPAA

2023 FOCS, SODA, ICALP, ISAAC, FCT, SOSA, ALENEX

2022 FOCS, STOC, APPROX

2021–2020 WAOA'21, ESA'21, SPAA'21, WADS'21, SODA'20, STACS'20

< **2020** ICALP '24, SWAT'24, SPAA'24, STOC'24, ITCS'24, SODA'24

- 2015–2016 **Graduate Student Representative**,
UNIVERSITY OF MARYLAND, Computer Science Department Council

- 2012–2014 **Graduate Student Representative**,
UNIVERSITY OF MARYLAND, Computer Science Department Education Committee

Talks

Locally Uniform Hashing

July 2023 ROMANIAN ALGORITHMS DAYS

Locality in Data Structures

May 2023 AARHUS UNIVERSITY, *Algorithms and Complexity Theory Seminar*

March 2023 NII SHONAN MEETING: *New Frontiers in Locality in Computation*

Daisy Bloom Filters

Nov. 2022 ALGORITHMIC RESEARCH COOPERATION AROUND ØRESUND (ARCO)

An Extendable Data Structure for Incremental Stable Perfect Hashing

May 2023 DAGSTUHL SEMINAR: *Scalable Data Structures*

July 2022 STOC

June 2022 HIGHLIGHTS OF ALGORITHMS (HALG) (short)

Dictionaries et al.

Sept. 2021 DIGITAL RESEARCH CENTER DENMARK (DIREC)

May 2021 BARC, *Seminar*

March 2021 BAR-ILAN UNIVERSITY, *Computer Science Department Colloquium*

Feb. 2021 DAGSTUHL SEMINAR: *Scalable Data Structures*

Upper Tail Analysis of Bucket Sort and Random Tries

June 2020 20TH HAIFA WORKSHOP ON GRAPH THEORY, COMBINATORICS AND ALGORITHMS

Dynamic Dictionaries for Multisets and Counting Filters with Constant Time Operations

Aug. 2021 WADS

A Dynamic Space-Efficient Filter with Constant Time Operations

June 2020 SWAT

Dec. 2019 UTRECHT UNIVERSITY, Algorithms Seminar

Sept. 2019 GI-DAGSTUHL SEMINAR: Algorithms for Big Data

July 2019 WORKSHOP ON LOCAL ALGORITHMS (WOLA)

The Descent of Cuckoos, and Selection in Relation to Nests

June 2019 HIGHLIGHTS OF ALGORITHMS (HALG) (short)

June 2019 19TH HAIFA WORKSHOP ON GRAPH THEORY, COMBINATORICS AND ALGORITHMS

May 2019 ISRAELI NETWORKING DAY

March 2019 MAX PLANCK INSTITUTE FOR INFORMATICS, Theory Seminar

Jan. 2019 DAGSTUHL SEMINAR: *Data Structures for the Cloud and External Memory Data*

Improved Bounds for the Traveling Salesman Problem with Neighborhoods on Uniform Disks

Nov. 2018 TEL AVIV UNIVERSITY, Computational Geometry Seminar

Oct. 2018 *7th French-Israeli Workshop on Foundations of Computer Science*

Aug. 2018 CCCG

April 2018 CENTRA DE RECERCA MATEMATICA, IRP Program

Minimizing Uncertainty through Sensor Placement with Angle Constraints

Aug. 2016 CCCG

On Computing Maximal Independent Sets of Hypergraphs in Parallel

June 2014 SPAA

References

Prof. Samir Khuller

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Prof. Rasmus Pagh

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Prof. Guy Even

Tel Aviv University
Dept. of Electrical Engineering - Systems
Computer and Software Eng. Bldg., Room 208
Tel Aviv, IL, 68878
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