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Positions

1/05/2021–present **Postdoc**,
Basic Algorithms Research Copenhagen (BARC)
IT University of Copenhagen, Copenhagen, Denmark.

1/09/2018–30/04/2021 **Postdoc**,
Tel Aviv University, Tel Aviv, Israel.
Host: Guy Even

Education

03/09/2013–17/08/2018 **Ph.D. in Computer Science**,
University of Maryland, College Park, MD, USA.
Thesis: *Approximation Algorithms for Geometric Clustering and Touring Problems*
Advisor: Samir Khuller

30/08/2010–19/05/2013 **M.Sc. in Computer Science**,
University of Maryland, College Park, MD, USA.
Advisor: Aravind Srinivasan

25/09/2006–12/06/2010 **B.Sc. in Mathematics (Honors) and B.Sc. in Computer Science**,
University of Chicago, Chicago, IL, USA.
Four-year scholarship

Research Interests

Data Structures, Computational Geometry, Randomized and Approximation Algorithms

Submitted Conference Articles

2021 **Extendable Predictable Perfect Hashing**
Ioana O. Bercea, Guy Even

Refereed Conference Articles (Author Order Alphabetical)

WADS'21 (to appear) **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*

Journal Articles

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

Manuscripts

2019 Ioana O. Bercea, Tobias Mömke. "Polynomial Time Algorithms for Euclidean Maximum TSP and Maximum Scatter TSP"

2018 Saba Ahmadi, Ioana O. Bercea, Samir Khuller, Sheng Yang. "Counting Small Cliques and Four Node Subgraphs in Bounded Degeneracy Graphs"

2014 Ioana O. Bercea, David Harris. "New Approximations for the Graph Vertex Pricing Problem"

Long-term Research Visits

Spring 2018 **Research Program**, Centre de Recerca Matematica, Barcelona, Spain, *Intensive Research Program in Discrete, Combinatorial and Computational Geometry*

Summer 2017 **Research Internship**, Max Planck Institute for Informatics, Saarbrücken, Germany, w. Tobias Mömke

Summer 2016 **Research Internship**, Max Planck Institute for Informatics, Saarbrücken, Germany, w. Parinya Chalermsook

Summer 2012 **Research Internship**, Microsoft Research India, Bangalore, India, w. Navin Goyal

Invited Workshops

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*

Talks

Dictionaries et al.

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

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)

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

Teaching

Spring 2016 **Co-Intructor 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 350: 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

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, 2009–2010 **Dean's List**, University of Chicago.

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, ICDCN 2020.

Journal Reviewer, *Theoretical Computer Science, Networks, ACM Transactions on Sensor Networks, The Visual Computer*.

Conference Reviewer, ESA'21, SPAA'21, WADS'21, SODA'20, STACS'20, FC'18, SoCG'18, SPAA'17, FC'18, SoCG'18.

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.