

Education

Carnegie Mellon University

Ph.D. in Computer Science, Advised by Prof. Bernhard Haeupler
Thesis: "Towards Universal Optimality in Distributed Optimization"

School of Computer Science
2015–2020 (Degree conferred on 11 Aug 2020)

University of Zagreb

Master of Computer Science, Advised by Prof. Mile Šikić
GPA: 3.84 (out of 4.0)

Faculty of Electrical Engineering and Computing
2012–2015

University of Zagreb

Bachelor of Computer Science
GPA: 3.87 (out of 4.0)

Faculty of Electrical Engineering and Computing
2009–2011

Professional Experience

Google Research, research scientist

Algorithms & Optimization group
Mar 2023–present

ETH Zürich, postdoctoral scholar

continued my research in the area of principles of distributed computing theory exercise designer for "Algorithmen und Datenstrukturen", Fall 2022
co-instructor for "Principles of Distributed Computing", Spring 2022
co-instructor for "Advanced Algorithms", Fall 2021
teaching assistant for "Principles of Distributed Computing", Spring 2021
teaching assistant for "Algorithms, Probability, and Computing", Fall 2020

Research group of Prof. Mohsen Ghaffari

Sep 2020–Feb 2023

Google Research, research intern

using AI techniques for questions in theoretical computer science

May–Aug 2019

VMware, research intern

worked on theoretical algorithmic lower bounds

Research Team
May–Sep 2016

Carnegie Mellon University, research and teaching assistant

led and participated in many research projects in the area of theoretical computer science
teaching assistant for 15-859 Z "Algorithmic Superpower Randomization" (incl. 1 guest lecture), Fall 2019
teaching assistant for 15-850 "Advanced Algorithms" (incl. 1 guest lecture), Fall 2018
teaching assistant for 15-750 "Graduate Algorithms", Spring 2016

2016–2020

Vibby (startup), software developer

developed a social video platform

Founding Development Team
2013–2015

Twitter, research intern

developed a distributed system for online clustering large number of tweets based on NLP

Advanced Analytics team
Jul–Oct 2013

Facebook, software engineering intern

developed parts of the new frontend ad console interface

Summer of 2012

Facebook, software engineering intern

multiple projects

Summer of 2011

Facebook, software engineering intern

developed core backend infrastructure

Summer of 2010

University of Zagreb, teaching assistant

TA for "Algorithms and Data Structures" and "Competitive programming" course (multiple guest lectures)

2010–2012

Awards

2021 ACM-EATCS Principles of Distributed Computing Doctoral Dissertation Award

for the best thesis in the area of principles of distributed computing (co-awarded with Leqi Zhu)

2021

DFINITY Scholarship for 2018 (individual)

a total of 3 individual and 1 team scholarships were awarded

2018

ACM International Collegiate Programming Competition (ACM ICPC), World Finals

silver medal (ranked 8/122 invited three-member teams)

2014

Rector's Grand Award, University of Zagreb*for the paper titled "LISA - A tool for DNA alignment" (in Croatian, "LISA - Alat za poravnanje DNA očitavanja")*

2013

The City of Zagreb Merit Scholarship*given to top students in Croatia's capital city*

2009–2011

International Olympiad in Informatics (IOI)*gold medal in 2007 (ranked 4/285), gold medal in 2008 (ranked 5/283)*

2007–2009

US Invitational Computing Olympiad (USACO)*first place out of 15 invited competitors; I was the only invited non-US competitor*

June 2008

TopCoder High School Tournament (\$12,000)*first place out of 8 invited international three-member teams*

June 2008

Publications (@ = authors sorted alphabetically; © = sorted by contribution; Ⓐ = order randomized)

- [1] Goran Zucic. "A Simple Boosting Framework for Transshipment". In: *Annual European Symposium on Algorithms (ESA)* (2023).
- [2] Goran Zucic Ⓐ Bernhard Haeupler Ⓐ Antti Roeyksko. "Sparse Semi-Oblivious Routing: Few Random Paths Suffice". In: *Proceedings of the 2023 ACM Symposium on Principles of Distributed Computing (PODC)*. 2023.
- [3] Václav Rozhoň Ⓐ Bernhard Haeupler Ⓐ Anders Martinsson Ⓐ Christoph Grunau Ⓐ Goran Zucic. "Parallel Breadth-First Search and Exact Shortest Paths and Stronger Notions for Approximate Distances". In: *ACM Symposium on Theory of Computing (STOC)*. 2023.
- [4] Ioannis Anagnostides Ⓐ Christoph Lenzen Ⓐ Bernhard Haeupler Ⓐ Goran Zucic Ⓐ Themis Gouleakis. "Brief Announcement: Almost Universally Optimal Distributed Laplacian Solver". In: *Proceedings of the 2022 ACM Symposium on Principles of Distributed Computing (PODC)*. 2022.
- [5] Mohsen Ghaffari @ Goran Zucic. "Universally-Optimal Distributed Exact Min-Cut". In: *Proceedings of the 2022 ACM Symposium on Principles of Distributed Computing (PODC)*. 2022.
- [6] Bernhard Haeupler @ D. Ellis Hershkowitz @ Goran Zucic. "Adaptive-Adversary-Robust Algorithms via Small Copy Tree Embeddings". In: *Annual European Symposium on Algorithms (ESA)*. 2022.
- [7] Goran Zucic and Di Wang © Aranyak Mehta © D. Sivakumar (first two authors made equal contributions). "Learning Robust Algorithms for Online Allocation Problems Using Adversarial Training". In: *ICLR 2022 Workshop on Gamification and Multiagent Solutions (ICLR GMS)* (2022).
- [8] Václav Rozhoň Ⓐ Christoph Grunau Ⓐ Bernhard Haeupler Ⓐ Goran Zucic Ⓐ Jason Li. "Undirected (1+epsilon)-Shortest Paths via Minor-Aggregates: Near-Optimal Deterministic Parallel & Distributed Algorithms". In: *ACM Symposium on Theory of Computing (STOC)*. 2022.
- [9] Goran Zucic Ⓐ Goramoz Goranci Ⓐ Mingquan Ye Ⓐ Bernhard Haeupler Ⓐ Xiaorui Sun. "Universally-Optimal Distributed Shortest Paths and Transshipment via Graph-Based L1-Oblivious Routing". In: *ACM-SIAM Symposium on Discrete Algorithms (SODA)* (2022).
- [10] Bernhard Haeupler @ David Wajc @ Goran Zucic. "Universally-Optimal Distributed Algorithms for Known Topologies". In: *ACM Symposium on Theory of Computing (STOC)* (2021).
- [11] Mohsen Ghaffari @ Bernhard Haeupler @ Goran Zucic. "Hop-Constrained Oblivious Routing". In: *ACM Symposium on Theory of Computing (STOC)* (2021).
- [12] Bernhard Haeupler @ D. Ellis Hershkowitz @ Goran Zucic. "Tree Embeddings for Hop-Constrained Network Design". In: *ACM Symposium on Theory of Computing (STOC)* (2021).
- [13] Bernhard Haeupler @ David Wajc @ Goran Zucic. "Network Coding Gaps for Completion Times of Multiple Unicasts". In: *IEEE Symposium on Foundations of Computer Science (FOCS)* (2020).
- [14] Domagoj Bradac @ Anupam Gupta @ Sahil Singla @ Goran Zucic. "Robust Algorithms for the Secretary Problem". In: *Innovations in Theoretical Computer Science Conference (ITCS)* (2019).
- [15] Domagoj Bradac @ Sahil Singla @ Goran Zucic. "(Near) Optimal Adaptivity Gaps for Constrained Stochastic Probing". In: *International Conference on Randomization and Computation (RANDOM)* (2019).
- [16] Keren Censor-Hillel @ Bernhard Haeupler @ D. Ellis Hershkowitz @ Goran Zucic. "Erasure Correction for Noisy Radio Networks". In: *33rd International Symposium on Distributed Computing (DISC)*. Vol. 146. Leibniz International Proceedings in Informatics (LIPIcs). 2019, 10:1–10:17. ISBN: 978-3-95977-126-9.
- [17] Bernhard Haeupler @ Jason Li @ Goran Zucic. "Minor Excluded Network Families Admit Fast Distributed Algorithms". In: *Proceedings of the 2018 ACM Symposium on Principles of Distributed Computing (PODC)*. ACM. 2018, pp. 465–474.

- [18] Filip Pavetić © Ivan Katanić © Gustav Matula © Goran Zuzic © Mile Šikić. “Fast and Simple Algorithms for Computing both $LC S_k$ and $LC S_{k+}$ ”. In: *Proceedings of the Prague Stringology Conference 2018*. Ed. by Jan Holub and Jan Žďárek. Czech Technical University in Prague, Czech Republic, 2018, pp. 50–62. ISBN: 978-80-01-06484-9.
- [19] Keren Censor-Hillel @ Bernhard Haeupler @ D. Ellis Hershkowitz @ Goran Zuzic. “Broadcasting in Noisy Radio Networks”. In: *Proceedings of the ACM Symposium on Principles of Distributed Computing (PODC)*. ACM. 2017, pp. 33–42.
- [20] Bernhard Haeupler @ Taisuke Izumi @ Goran Zuzic. “Near-Optimal Low-Congestion Shortcuts on Bounded Parameter Graphs”. In: *International Symposium on Distributed Computing (DISC)*. Springer. 2016, pp. 158–172.
- [21] Bernhard Haeupler @ Taisuke Izumi @ Goran Zuzic. “Low-Congestion Shortcuts Without Embedding”. In: *Proceedings of the 2016 ACM Symposium on Principles of Distributed Computing (PODC)*. ACM. 2016, pp. 451–460.
- [22] Tin Bariša © Mihovil Bartulović © Goran Žužić © Šandor Ileš © Jadranko Matuško © Fetah Kolonić. “Nonlinear Predictive Control of a Tower Crane Using Reference Shaping Approach”. In: *Power Electronics and Motion Control Conference and Exposition (PEMC), 2014 16th International*. IEEE. 2014, pp. 872–876.

Service

Program committee

served on the program committee for ITCS'24 and PODC'23

Paper review

reviewed papers for STOC'24, ITCS'24, SODA'24, FOCS'23, ICALP'23, PODC'23, STOC'23, ITCS'23, SODA'23, DISC'23, SPAA'22, STOC'22, SODA'21, FOCS'21, STOC'21, FOCS'20, PODC'20, ITCS'20, SODA'19, FOCS'19, STOC'18, SODA'18, *Algorithmica*, *SICOMP*, *DIST*, and *TCS*

Mentorship

Jan Tempus — Bachelor's thesis, “Efficient Optimization-Based Reductions for Classical Graph Problems”, 2023, ETH
Antti Röyskö — Master's thesis, “Near-Optimal Deterministic Routing with Preprocessing”, 2022, ETH

Theory reading group

sole organizer; coordinated 13 weekly lectures at CMU

Jan–May 2018

ACM ICPC Central Europe Regional Contest (CERC), scientific committee

prepared tasks for an international programming competition

Nov 2015, 2016, and 2017

Penkala Association, organizing committee

organized retreats and activities to facilitate networking of young Croatian scientists

2017, 2018

X.FER Association, vice president

promoted competitive programming among computer science student population

2012–2013

Contest coaching and popularization

Learning to Code on the Cloud, Purdue University, May 2021 (guest lecture, online).

ACM World finals 2015 official coach of the Croatian team (silver medal), Morocco, Jul 2015.

Guest lectures at various Croatian venues (Krk informatics summer camp 2014, 2015, 2018;

Krapina informatics winter camp 2016, 2020; Mutimir research retreat 2017, 2020).

Problemsetter for various Croatian contests (COCI 2009–2011; ACM ICPC national contest 2015–2017; etc.)

App Start Contest, organizing committee (one of 14)

Helped organized three App Start Contests, a student competition in product development. The 2012 edition attracted over 400 competitors and had over \$ 10 000 in prizes.

2011, 2012, 2013

Talks

A Simple Boosting Framework for Transshipment

ESA 2023, invited conference talk

Sep 2023

Parallel breadth-first search and exact shortest paths and stronger notions for approximate distances

STOC 2023, invited conference talk

June 2023

Universal optimality in distributed computing and its connections to diverse areas of theoretical computer science

Aalto Theory Seminar

Apr 2023

Universal optimality in distributed computing and its connections to diverse areas of theoretical computer science

EPFL Theory Coffee

Oct 2022

Adaptive-Adversary-Robust Algorithms via Small Copy Tree Embeddings

ESA 2022, invited conference talk

Sep 2022

Universally-Optimal Distributed Exact Min-Cut

PODC 2022, invited conference talk

July 2022

Brief Announcement: Almost Universally Optimal Distributed Laplacian Solver <i>PODC 2022, invited conference talk</i>	July 2022
Universal optimality in distributed computing and its connections to diverse areas of theoretical computer science <i>SIROCCO 2022, invited talk on a topic of choice</i>	June 2022
Approximation Boosting: a Pervasive and Underexplored Feature of Modern Graph Algorithms <i>Workshop on Spectral and Convex Optimization Techniques in Graph Algorithms, Bocconi university, Milan</i>	June 2022
Universal optimality in distributed computing and its connections to diverse areas of theoretical computer science <i>Theoretical computer science seminar at the University of Zagreb, Faculty of science, Math Department</i>	June 2022
Universally-Optimal $(1 + \epsilon)$-Approximate Shortest Path and Transshipment in the Distributed Setting <i>HALG 2022, contributed talk</i>	June 2022
Universal optimality in distributed computing and its connections to diverse areas of theoretical computer science <i>Not-so-local local algorithms, an online talk series on sublinear algorithms, invited talk</i>	May 2022
Universal optimality in distributed computing and its connections to diverse areas of theoretical computer science <i>IRIF, Paris, invited seminar talk</i>	Apr 2022
A Simple Boosting Framework for Transshipment <i>"Mittagseminar": Seminar organized at ETH by the Institute of Theoretical Computer Science</i>	Mar 2022
Universally-Optimal Distributed Shortest Paths and Transshipment via Graph-Based ℓ_1-Oblivious Routing <i>SODA 2022, invited conference talk</i>	Jan 2022
Universal optimality in distributed computing and its connections to diverse areas of theoretical computer science <i>Google research talk</i>	Nov 2021
Universally-Optimal $(1 + \epsilon)$-Approximate Shortest Path and Transshipment in the Distributed Setting <i>"Mittagseminar": Seminar organized at ETH by the Institute of Theoretical Computer Science</i>	Oct 2021
An Overview of Universal Optimality in Distributed Computing <i>ADGA workshop 2021, invited speaker at a workshop colocated with DISC 2021</i>	Oct 2021
Hop-Constrained Oblivious Routing <i>STOC 2021, invited conference talk</i>	Jun 2021
Universally-Optimal Distributed Algorithms for Known Topologies <i>STOC 2021, invited conference talk</i>	Jun 2021
Universally-Optimal Distributed Algorithms for Known Topologies <i>HALG 2021, contributed talk</i>	May 2021
Low-Congestion Shortcuts are Universally Optimal for Distributed Computing <i>"Mittagseminar": Seminar organized at ETH by the Institute of Theoretical Computer Science</i>	Nov 2020
Robust Algorithms for the Secretary Problem <i>HALG 2020, contributed talk</i>	Sep 2020
Towards Universal Optimality in Distributed Optimization <i>Max Planck Institute for Informatics</i>	Jan 2020
Erasure Correction for Noisy Radio Networks <i>DISC 2019, invited conference talk</i>	Oct 2019
(Near) Optimal Adaptivity Gaps for Constrained Stochastic Probing <i>RANDOM 2019, invited conference talk</i>	Sep 2019
Network Coding Gaps for Multiple-Unicast Completion Time <i>Google Algorithms Seminar</i>	Aug 2019
Byzantine Secretary Problem <i>CMU Theory Seminar</i>	Feb 2019
Minor Excluded Network Families Admit Fast Distributed Algorithms <i>PODC 2018, invited conference talk</i>	Jul 2018
Communication in Noisy Radio Networks <i>CMU Theory Seminar</i>	May 2018
Distributed Computing with Shortcuts—Near Optimal on Special Graphs <i>CMU Theory Seminar</i>	Oct 2016
Low-Congestion Shortcuts Without Embedding <i>PODC 2016, invited conference talk</i>	2016
<i>"Exploring the Limits of Computation" project (ELC), Tokyo, invited seminar talk</i>	