Edin Husić

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EMPLOYMENT

> **Postdoctoral researcher** *February 2022 -*
Mentor: prof. Fabrizio Grandoni
AI Lab IDSIA (Istituto Dalle Molle di Studi sull'Intelligenza Artificiale),
USI-SUPSI, Lugano, Switzerland.

EDUCATION

> **Ph.D. in Mathematics** *October 2017 - November 2021*
Thesis: *"Nash Welfare, Valuated Matroids, and Gross Substitutes"*. Link.
Supervisor: prof. László A. Végh.
London School of Economics and Political Science, London, UK.

> **Master 2 of Fundamental Computer Science** *2016 - 2017*
Supervisors: prof. Stéphan Thomassé and dr. Nicolas Trotignon.
École Normale Supérieure de Lyon, Lyon, France.

> **Master of Mathematical Sciences** *2015 - 2017*
Thesis: *"The maximum independent set problem and equistable graphs"*. Link.
Supervisors: dr. Ademir Hujdurović and prof. Martin Milanič.
University of Primorska, Koper, Slovenia.

> **Bachelor of Mathematics** *2012 - 2015*
Thesis: *"Submodular functions"*. Link.
Supervisor: prof. Martin Milanič.
University of Primorska, Koper, Slovenia.

AWARDS

- Runner-up for the 2022 **Doctoral Dissertation Award** for the most distinguished body of research leading to a doctorate in the field of Operational Research, from UK OR Society.
- With Marko Prcać and Vladan Jovičić **won start-up challenge** *"Podjetna Primorska"*, Koper, Slovenia, May 2016.

MANUSCRIPTS

M1 *Approximating the maximum independent set of convex polygons with a bounded number of directions.* Fabrizio Grandoni, Edin Husić, Mathieu Mari, and Antoine Tinguely.

REFEREED CONFERENCE PAPERS

C10 *Approximating Nash Social Welfare by Matching and Local Search.*
Jugal Garg, Edin Husić, Wenzheng Li, László Végh, Jan Vondrák. Accepted to the 55th ACM Symposium on Theory of Computing (**STOC 2023**).

C9 *On the Correlation Gap of Matroids.*
Edin Husić, Zhuan Khye Koh, Georg Loho, László Végh. Accepted to the 24th Conference on Integer Programming and Combinatorial Optimization (**IPCO 2023**).

C8 *Tractable fragments of the maximum Nash welfare problem.*
Jugal Garg, Edin Husić, Aniket Murhekar, and László Végh. 18th Conference on Web and Internet Economics (**WINE 2022**). Troy, NY, USA.

C7 *FPT algorithms for finding near-cliques in c-closed graphs.*
Balaram Behera, Edin Husić, Shweta Jain, Tim Roughgarden, and Comandur Seshadhri. 13th Innovations in Theoretical Computer Science Conference (**ITCS 2022**). Berkeley, California.

C6 *On complete classes of valuated matroids.*
Edin Husić, Georg Loho, Ben Smith, and László Végh. ACM-SIAM Symposium on Discrete Algorithms (**SODA 2022**). Alexandria, Virginia, USA.

C5 *Approximating Nash Social Welfare under Rado Valuations.*
Jugal Garg, Edin Husić, and László Végh. 53rd Annual ACM SIGACT Symposium on Theory of Computing (**STOC 2021**). Rome, Italy.

C4 *Auction algorithms for market equilibrium with weak gross substitute demands and their applications.* Jugal Garg, Edin Husić, and László Végh. 38th International Symposium on Theoretical Aspects of Computer Science (**STACS 2021**). Saarbrcken, Germany.

C3 *The independent set problem is FPT for even-hole-free graphs.*
Edin Husić, Stéphan Thomassé, and Nicolas Trotignon. 14th International Symposium on Parameterized and Exact Computation (**IPEC 2019**). Münich, Germany.

C2 *A polynomial-time algorithm for the independent set problem in $\{P_{10}, C_4, C_6\}$-free graphs.*
Edin Husić and Martin Milanič. International Workshop on Graph-Theoretic Concepts in Computer Science (**WG 2019**). Vall de Núria, Spain. **Best Student Paper Award.**

C1 *The minimum conflict-free row split problem revisited.*
A. Hujdurović, E. Husić, M. Milanič, R. Rizzi, A. I. Tomescu. International Workshop on Graph-Theoretic Concepts in Computer Science (**WG 2017**). Eindhoven, The Netherlands.

JOURNAL PAPERS

J5 *On complete classes of valuated matroids.*
Edin Husić, Georg Loho, Ben Smith, and László Végh. Passed the first phase with **TheoretiCS**. Extended version of **C6**.

J4 *Safety in multi-assembly via paths appearing in all path covers of a DAG.*
Manuel Cáceres, Brendan Mumey, Edin Husić, Romeo Rizzi, Massimo Cairo, Kristoffer Sahlin, and Alexandru I. Tomescu. Accepted to IEEE/ACM Transactions on Computational Biology and Bioinformatics (**TCBB**).

J3 *Approximating Nash Social Welfare under Rado Valuations.* Jugal Garg, Edin Husić, and László Végh. **SIGecom Exchanges** 19(1): 45-51 (2021). Summary of **C5**.

J2 *MIPUP: minimum perfect unmixed phylogenies for multi-sampled tumors via branchings and ILP.* E. Husić, X. Li, A. Hujdurović, M. Mehine, R. Rizzi, V. Mäkinen, M. Milanič and A.I. Tomescu. **Bioinformatics** 35.5 (2019): 769-777.

J1 *Perfect phylogenies via branchings in acyclic digraphs and a generalization of Dilworth's theorem.* A. Hujdurović, E. Husić, M. Milanič, R. Rizzi, A. I. Tomescu. ACM Transactions on Algorithms (**TALG**) 14.2 (2018): 1-26. Extended version of **C1**.

RESEARCH VISITS

- Visiting researcher, Department of Computer Science, University of Helsinki, (Duration: 01.12. – 20.12.2019). Collaborator: dr. Alexandru I. Tomescu.

SKILLS

Coding: Java, Python, Cplex, basics of OCaml:

- A few projects at github.
- Software MIPUP (accompanies **J2**): reconstructs perfect phylogeny tree (genetic history) of tumor samples via branchings in directed acyclic graphs and related integer linear programs.

Languages: Bosnian (native), English (fluently), Slovenian (fluently), German (basics A2-B1).

TEACHING (Class teacher/teaching assistant):

- Optimisation Theory 2019/2020. LSE.
- Real Analysis 2019/2020. LSE.
- Algorithms and Computation 2019/2020. LSE.
- Fundamentals of Operations Research 2018/2019 and 2019/2020. LSE
- Modelling in Operations Research 2018/2019 and 2019/2020. LSE
- Operational Research Methods 2017/2018 and 2018/2019. LSE.
- *"Graphs are everywhere"* at summer school "Mathematics is cool", Koper, Slovenia, August 2017.
- Mathematics instructor at "ACADEMUS", Slovenia, October 2015 - July 2016.

SERVICES

Program Committee: WINE 2023.

Journal Reviews: Mathematical Programming (Series B), SIAM Journal on Discrete Mathematics, Theoretical Computer Science, Theory of Computing Systems.

Conference Reviews: STOC, FOCS, SODA, ICALP, IPCO, ESA, MFCS, FSTTCS, ISAAC, WADS, IWOCA.

MATH CONTESTS

- *Honourable mention,* Open Mathematical Olympiad of Belarusian-Russian Universities (2014).
- *Honourable mention,* IMC-International Mathematics Competition (2013).
- *Bronze medal,* Open International Internet-Olympiad (2013).

SUMMER SCHOOLS

> *European Summer School on Learning in Games, Markets, and Online Decision Making.* (Virtual) Sapienza University of Rome, Italy, 06.09 - 10.09.2021.

> *21st Max Planck Advanced Course on the Foundations of Computer Science:* Market Design and Computational Fair Division (Virtual) Saarbrücken, Germany, August 24-28, 2020.

> *Hausdorff School on Combinatorial Optimization*, Bonn, Germany, 20.08-24.08.2018.

> *São Paulo School of Advanced Science on Algorithms, Combinatorics and Optimization*, São Paulo, Brazil, 18.07 - 29.07.2016.

> *PhD Summer School in Discrete Mathematics 2015* Rogla, Slovenia, 27.06 - 3.07.2015.