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Richard Hladík

A first-year student of the Computer science MSc programme at ETH Zürich, currently exploring ways of maximising my impact. Open source enthusiast and an aspiring Effective Altruist. I love pushing the boundaries of human knowledge and creating new and meaningful things, especially in a group of similarly passionate people. Research interests: algorithms, data structures, combinatorial optimization and flow networks.

Education

Sept. 2021–Now — MSc in Computer science *(expected graduation: June 2023)*
ETH Zürich

Sept. 2017–June 2021 — Bc. in Computer science
Charles University, Faculty of Mathematics and Physics, Prague
perfect grades (GPA of 1.00) throughout the studies and 224 ECTS credits

May 2017 — upper secondary education
Grammar School and Commercial Academy Mariánské Lázně

Achievements & Awards

2021 ETH-D scholarship for excellent Master's students
2018 ACM-ICPC World Finals[†] – 56th place
2017 International Olympiad in Informatics – Silver medal (69th place)
2016 ACM-ICPC Central European Regional Contest[†] – 12th place (unofficial high school participation)
2016 International Olympiad in Informatics – Bronze medal (154th place)

Research Experience

Mar. 2020–Jun. 2021 — *Computer Science Institute, Charles University, Prague.* Research in network flows and convex optimisation, supervised by Martin Koutecký. A part of a Student Faculty Grant and a superset of my bachelor's thesis. We have proposed two new combinatorial algorithms for the multicommodity flow (MCF) problem, and tied their time complexity to combinatorial properties of the MCF polyhedron. Journal article(s) in progress.

June 2018–Dec. 2020 — *Industrial Informatics Research Center, Czech Technical University, Prague.* Part-time research in scheduling and optimisation, supervised by Anna Minaeva. Proved NP-hardness of a certain periodic scheduling problem, developed and tested several new heuristics for it, proposed a new method of instance generation. The best heuristic solves even moderately-sized instances optimally or almost optimally in a matter of seconds.

Publications

[1] Richard Hladík, Anna Minaeva, and Zdeněk Hanzálek. On the complexity of a periodic scheduling problem with precedence relations. In *International Conference on Combinatorial Optimization and Applications*, page 107–124. Springer, 2020.

Projects

Outotune (2020–Now) – a harmoniser with VST3, LV2 and JACK support written in C++. Lets one sing chords in real time using a MIDI keyboard and one's voice, by analysing it and resynthesising it at different pitches.

Programming languages & technologies

Professionally worked with C++ and Python, also fluent in C and sh. Worked with C# and Haskell at some point. Experience with Git, NumPy, PyTorch, TEX, TensorFlow, Pandas, among others. Long-time Linux user with server administration experience.

Other

Languages: Czech (native), English (C2 – CAE Grade A), German (B2), French (basics)
Authorisations: I'm a holder of an EU passport and an EU driver's licence of class B.

In my free time, I help to organise seminars, competitions and educational camps for talented highschoolers:

2018–Now *Czech Olympiad in Informatics*, *Czech IOI Selection Camp* – a series of off- and on-site competitions for Czech highschoolers that selects the Czech team for the International Olympiad in Informatics.

2017–2020 *KSP* – an algorithmisation correspondence seminar for Czech highschoolers; had one of leading roles in 2018–2019, managing 10–20 people and having responsibility for the seminar's main category.

2018–2019 *Czech-Polish-Slovak Preparation Camp* – a series of on-site competitions for high school students advancing to the International Olympiad in Informatics.

[†] a team competition; with my friends Václav Volhejn and Filip Bialas