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Experience

Optimisation Research Intern (June 2018–August 2020) – *Industrial Informatics Research Center, Czech Technical University, Prague*

Research in scheduling and optimisation. Proved NP-hardness of a certain periodic scheduling problem, developed a heuristic which solves even moderate-sized instances efficiently. Primary author of the resulting paper, which has been recently accepted for publication.

Research in Network Flows (March 2020–present) – *Computer Science Institute, Charles University, Prague*

A part of a student grant and my bachelor's thesis. Research on the multicommodity flow and the length-bounded flow problems, supervised by *Mgr. Martin Koutecký, Ph.D.*, with the aim of discovering an exact polynomial-time combinatorial algorithm for both. As of now, we have proven several strong theoretical properties and proposed a combinatorial algorithm that works well in practice.

Education

Charles University (2017–present) – *Prague*

Studying **General computer science** at the Faculty of Mathematics and Physics. As of the time of writing, perfect grades and 213 ECTS credits in the first three years.

Skills, abilities

Programming languages and technologies: professionally worked with **C++** and **Python**, fluent in **C** and **sh**. Knowledge of **C#**, **Haskell**, **T_EX**, some knowledge of **Rust**, **Perl**, **HTML+Javascript+CSS**. Comfortable with **Git**, **TensorFlow**, **NumPy**, **Pandas**, **Googletest**, among others. Long-time user of **Linux** with system administration experience.

Interested in **data structures**, **algorithmisation**, discrete and convex optimisation, and systems programming.

Strong algorithmic thinking proven in programming contests and research.

Competitive programming

56th place at ACM-ICPC World Finals 2018.

5th place in the Central European Regional Contest (CERC) 2019. **9th place** in 2018, **6th place** in 2017, **12th place** in 2016 (unofficial participation).

Silver medal (69th place) at the International Olympiad in Informatics 2017, **bronze medal (154th place)** in 2016.

3rd place in the Czech Mathematical Olympiad (category P) 2016, Czech national pre-IOI competition

Projects

Outotune (2020) – *real-time harmoniser*

A **harmoniser** plugin with VST3, LV2 and JACK integration written in C++. Lets you sing harmonies in real time using only your voice and a MIDI keyboard. Analyses your voice and synthesizes it at different pitches.

Rambajz (2019) – *real-time tuner and spectrogram*

Graphical real-time tuner and infinitely zoomable spectrogram. Written in C, using SDL and JACK, with emphasis on low latency and high tuning precision.

icpc-notebook (2016–2018) – *collection of algorithms and data structures*

A collection of algorithms and data structures which was used by our team at the ACM ICPC World Finals 2018.

Languages

Czech – native

German – B1

English – C1

French – basics

Other activities

Co-organised the **Czech IOI Selection Camp 2018** and **2019**, a series of on-site competitions for Czech high school students. Was responsible for preparing and testing tasks and managing the contest environment.

Co-organised the **Czech-Polish-Slovak Preparation Camp 2018** and **2019**, a series of on-site competitions for high school students advancing to the International Olympiad in Informatics. Was responsible for proposing, preparing and testing tasks.

Co-organised **KSP** (2017–2019), a programming correspondence seminar for Czech high school students interested in algorithmisation and data structures. Had one of leading roles in 2018–2019.

Co-organised **Kasiopea** (2017–2019), a programming competition for high school students of all levels of programming skills. Helped prepare and test tasks.