Pavel Hudec

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📚 Education

Hong Kong University of Science and Technology <div align="right">**Hong Kong**</div>

PhD in Computer Science and Engineering supervised by Prof Amir Goharshady <div align="right">Sep 2021–Aug 2026</div>

Research: Applied parameterization to solve a range of problems in diverse areas of computer science.
- Utilized low **treewidth** of molecules to develop a faster approximate algorithm for computing **Wiener Index** of a molecule, available online.
- Designed parameterized algorithms based on **treewidth** and **vertex cover** for computing the vote success probability in the **Liquid Democracy** problem, in progress.

Coursework: Type theory, Combinatorial optimization, Cryptography, Parametrized algorithms, Artificial Intelligence

TA experience: Introduction to Blockchain, Cryptocurrencies and Smart Contracts, Programming in C++
- Graded assignments, gave comprehensive feedback to students.

Charles University in Prague <div align="right">**Prague, Czech Rep**</div>

Bc in General Mathematics <div align="right">Sep 2018–Jul 2021</div>

Coursework: Abstract algebra (including Model Theory and Universal algebra I), Algorithms and Combinatorics (Graph Algorithms II, Computational geometry II, Combinatorics and Graph Theory II), Machine Learning and Deep Learning

Thesis: Topological properties of algebraic curves (supervised by Dr Jan Šťovíček)

GPA: 1.33 (1 − best, 4 − fail), 1 for the final exam.

Activities: Organized mathematical correspondence seminars **PraSe** and **iKSko** for talented high school students
- Proposed, tested and proofread **30+** problems, graded **1000+** student solutions, wrote and proofread **20+** model solutions.
- Coordinated (graded, ensured fairness) at Middle European Mathematical Olympiad <div align="right">Aug 2019</div>

💼 Work Experience

Jane Street <div align="right">**Remote, London branch**</div>

Quantitative trading intern <div align="right">Jul 2020–Sep 2020</div>

- Examined relationship between volume traded and volatility of **500+** stocks over time.
- Used **Python** (pandas, matplotlib) to fine-tune models for predicting volatility and beta models over **500+** stocks.
- Used **Python** (pandas, matplotlib) to analyze data coming from a simulated stock exchange and based manual / automatic trading strategies on that, winning the internal competition of **15+** teams.
- Used **Excel** to quickly search for trading signals in **10+** diverse mock training scenarios.
- Took part in **10+** Bloomberg Terminal challenges aimed to get us comfortable with the software.

📊 Projects

Idleforces <div align="right">*A Codeforces simulator idle game*</div>

Hosted at https://idleforces.netlify.app/, on GitHub under an organization

- Used **React** for interactivity, **Redux** for in-session state management and **localStorage** for persistence.
- Designed a complex **10+** parameter model for a Codeforces contest, handling **1000+** simulated users gathered from the Codeforces API at the time.
- Came up with a **10+** parameter model for player skill that can be honed by participating in contests or by reading books.
- Implemented a string-based import / export save system.

Carcassonne Czechia <div align="right">*A website of the Czech national team in Carcassonne*</div>

Hosted at https://carcassonne-czechia.netlify.app/, on GitHub under an organization

- Used **Primereact** UI library to design a fully-responsive and consistent website.
- Used **React** to interactively display tournament statistics.
- Minimized manual updating and maintenance needed by employing a sensible structure combined with **GitHub Actions**.

Figgie clone <div align="right">*A card game designed by Jane Street*</div>

- Used **Node.js** and **PostgreSQL** database on the backend, **React** on the frontend connected by **Websockets** to build a fully-functional Figgie client with password authentication.

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🏆 Awards

International Mathematical Olympiad;	Silver Medal;	3x Recipient	Jul 2016, Jul 2017, Jul 2018
International Olympiad in Informatics;	Bronze Medal		Sep 2018
International Mathematics Competition 2021;	First Prize		Aug 2021
International Mathematics Competition 2019;	First Prize		Aug 2019
ACM Collegiate Programming Contest Central European Regional Round;	Participant		Dec 2019
ACM Collegiate Programming Contest Central European Regional Round;	Participant		Dec 2018

✋ Skills

Web Development: HTML, CSS, JavaScript, TypeScript (React, Redux, Node, Express, Vite, Mocha / Vitest), PostgreSQL, Websockets.
Data Analysis: SQL, Python (Numpy, Pandas, Matplotlib, Sklearn), basics of Deep Learning (PyTorch).
Miscellaneous: Git, GitHub (Actions), Linux / Terminal, LaTeX, Bloomberg Terminal, basics of Scala and MATLAB.

🌍 Languages

Czech (native), **English** (fully professional, TOEFL 107 / 120), **German** (intermediate – B1).