Vojtěch Votruba

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Education

› **Charles University, Prague** *M.Sc., 2025 – Present*

– Major: Theoretical Physics

› **Charles University, Prague** *B.Sc. 2022 – 2025*

– Major: Physics
– Graduated summa cum laude with an average of 1.15
– Bachelor's thesis: *Recognition of Dissipative Systems Using Machine Learning* under Michal Pavelka

› **Johannes Kepler Grammar School, Prague** *High School Diploma, 2018 – 2022*

– Graduated with honors (mark 1 in Czech, Mathematics, Physics, and English)
– Competed in regional rounds of the Mathematical Olympiad, Physics Olympiad, Chemistry Olympiad, and in the National round of the programming contest Kasiopea

Work Experience

› **Roklen — Junior Quantitative Developer** *Part-time, 2025 – Present*

– One of the founding members of a pilot algotrading project at the company
– Focused on implementing different strategies suggested by analysts; specifics bound by NDA
– Coded in typed Python, mainly using broker APIs, polars (as a pandas alternative), and standard data science libraries.

› **ELI Beamlines — Intern** *Paid Internship, 6 months, 2024*

– Developed a simulation in Python that was used for assessing the effects of a high-power laser diffracting on a plasma emitting nozzle; worked in the Department of Electron Acceleration in the group of Prof. Sergei Bulanov

› **Dept. of Atmospheric Physics, CUNI — Intern** *Paid Internship, 6 months, 2023*

– Contributed to the Department's daily use numerical Fortran code by implementing a new method to account for subgrid-scale turbulence in atmospheric fluid dynamics simulations

Skills

› **Programming & Tools**: Python (advanced; especially experienced in NumPy, scikit-learn, PyTorch, matplotlib), C (basic knowledge), JavaScript (working vanilla JS knowledge; some experience with npm and frontend frameworks), Git, TEX

› **Mathematics/Physics**: Good knowledge of Linear Algebra, Numerical Methods, Real Analysis & the theoretical foundations of Machine Learning. Strong knowledge of Physics, especially in Thermodynamics, Quantum Theory, and Analytical Mechanics. Both were acquired from university studies

› **Languages**: Czech (native), English (C2, CAE), French (∼ B1)

Personal Projects

› **Recognition of Dissipative Systems Using ML** `PyTorch`

– Physics-informed deep neural net using geometrical irreversible thermodynamics to predict the evolution of dissipative systems, e.g., chemical reactions. This project is a part of my undergraduate thesis under Michal Pavelka. [GitHub link]

› **Personal Website** AstroJS, TailwindCSS

– My personal website [vojtech-votruba.github.io] containing some information about me.

› **Virtual Interactive Tour of GJK** JavaScript

– Developed with my friends for our high school during the COVID-19 lockdown in 2020. [website link]

Conferences

› **International Workshop on Nonequlibrium Thermodynamics** Syros, Greece, 2025

– Oral presentation on Recognizing Generalized Gradient Dynamics by Means of Machine Learning

Interests

› Hiking, camping, and hitchhiking; Reading and debating

› Board games and video games, especially chess; Occasionally running, orienteering