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Jakub Bachurski

Cambridge CompSci. Passionate problem solver

Education

2021 – 2024 **Bachelor of Arts in Computer Science**, *University of Cambridge*, Trinity College
Second year – *present*
First year – **Class I** – Rank 9/115 in cohort

2018 – 2021 **High School Diploma**, *XIV LO im. Stanisława Staszica*, Warsaw
Full marks on Matura exam in Computer Science, Mathematics, and Physics.
Staszic is one of the best Polish high schools attracting talent from across the country.

Experience

Industry

Summer 2022 **Software Engineer Intern**, *QuantCo*, Berlin
Developed novel Python framework for building general-purpose ONNX models with a feature set superior to existing solutions, like on-line type inference and refined control flow support.
- Performed initial deployment into production – with planned open source release
- Follows functional programming principles – intuitive and easy to compose
- As a proof-of-concept implemented a BF interpreter, proving Turing-completeness
- Predictable, minimum-dependency, no boilerplate (2-3x shorter code than before)

Competitions

2021, 2022 **Google Code Jam**, *worldwide 358th (2021), 292nd (2022)*

2022 **Hack Cambridge Atlas**, *Twilio Prize*, project Flood Rescue Line

2021 **Polish Olympiads in Mathematics and Physics**, *finalist*

2019 – 2021 **Polish Olympiad in Informatics**, *twice silver medalist & finalist*
Consistently top 20 in Poland: 15th (2019), 19th (2020, TST 7th), 12th (2021)

2019 **Romanian Master of Informatics**, *bronze medalist*
International programming competition. Qualified by winning Polish TST.

2020 **"Wielka Przesmycka"**, *1st junior/7th (in Poland)*

2019 – 2022 **Various team competitions**
BubbleCup (5th), AGM (3rd), UKIEPC (11th), Polish High Championship (1st twice)

Miscellaneous

Sep. 2022 **Predictive modelling workshop**, *QuantCo*, Berlin
Conducted by experts & university lecturers, covering key topics over an intensive 20 hours.

April 2022 **Machine Learning Trainee**, *BISITE*, University of Salamanca
Worked with the CLINVAR dataset and discussed solutions used in the research group.

2021 – 2022 ***Introduction to Quantum Computing* course**, *Qubit by Qubit*, The Coding School

Languages

Polish Native speaker
English Advanced — *Work, education, day-to-day life in Cambridge.*
German Intermediate — *Lived in Berlin for summer internship.*

Projects

2022 **ONNX Project Contributor**, *open source*, `onnx/onnx`, Python & C++
Exposing alternative for accessing type inference (PR) and fixing type hints (PR).

2022 **Treaps**, *talk*, University of Cambridge, Churchill College

2020 – 2021 **"Approximate pattern matching with bounded absolute error"**, *paper*
First prize in Poland, special prize for best Computing project in the European Union Contest for Young Scientists (EUCYS 2021). My main source of experience with research.

2020 – 2021 **CanSat Software and Computer Vision Engineer**, *team project*, DeepSat
I was responsible for map stitching from aerial photos – `deepsat/mappet` (report). Gained insight in computer vision & machine learning. Distinction in the Polish finals (top 12).

2019 – 2020 **Algorithmics Computer Science Club**, *organiser*
I gave 21 1-3 hour public lectures and prepared >140 pages of notes, on e.g.: FFT, Fenwick trees, and lambda calculus. Improved my quick learning, communication and organisation.

Skill matrix

■□□□□ basic knowledge
■■□□□ intermediate knowledge with some project experience
■■■□□ extensive project experience
■■■■□ deepened expert knowledge
■■■■■ expert / specialist

	Level	Skill	Years	Comment
Language:	■■■■■	Python	6	*Main language, multiple projects*
	■■■□□	C++	4	*Competitive programming*
	■■■□□	Haskell	3	*Experimenting with FP (`hrad`), Codewars*
	■■□□□	Java, OCaml	1	*Studied at university*
	■■□□□	Rust, JavaScript	2	*Free time project: `chargeback` (wasm)*
OS:	■■■□□	Linux	4	*Use Linux day-to-day & for work*
Areas	■■■■□	Algorithms	4	*Competitions and research*
	■■■■□	ONNX	1	*Strong knowledge of the standard*
	■■■□□	Discrete mathematics	4	*University-level*
	■■□□□	Machine learning	2	*Workshops & own experiments*

Scholarships and Prizes

2022 **Mark Fitzgerald Prize**, best exam result in Trinity College

2018 – 2021 **Polish Children's Fund**, *Scholar*
- Advanced graph algorithms, e.g. flows, dominators, dynamic cycle detection (at UW)
- Bioinformatics (at CENT UW)

2020 **Polish Minister of Education Scholarship**

2019, 2020 **Capital City of Warsaw "Sapere Auso" Scholarship**

Volunteering, Skills, Hobbies

UCCPS Contest Manager of the University of Cambridge Competitive Programming Society.

Workshops I organised competitive programming workshops many times in high school.

Culture Interested in linguistics, geography, and history around the world.

Playing piano Used to take classes in music school, still play occasionally.

Hiking I enjoy amateur-level hiking, often in the Polish mountains.