

# Kacper Ozieblowski

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Enthusiastic Computer Science student eager to secure an internship or work opportunity. I am open to undertaking an internship spanning 2 to 10 months or working part-time, and I am flexible to work from Europe.

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## Education

ETH Zürich

ongoing - Sep 2023 – Aug 2025

MSc Computer Science - *Secure and Reliable Systems & Machine Intelligence*

Relevant Coursework (current): System Security, Probabilistic AI, Secure and Reliable AI, Algorithms Lab

Sorbonne University, Paris

Sep 2020 – July 2023

Bachelor Degree in Computer Science

Relevant Coursework: Object Oriented Programming (Java), Functional Programming (OCaml), Algorithm Analysis and Optimization, AI and OR Methods and Tools, Operating Systems (UNIX)

Bachelor Degree in Mathematics

Relevant Coursework: Measure Theory and Probability, Functional Analysis, Topology and Differential Calculus, Algebra and Arithmetic, Sequences and Series of Functions, Numerical Analysis

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## Experience

Research Internship: DO-Calculus on Bayesian Networks, Sorbonne University

July 2023 - Aug 2023

Research Internship: DO-Calculus on Bayesian Networks, Sorbonne University

Aug 2022 - Sep 2022

- Expanded aGrUM - an open-source library for graphical models, with do-calculus and causality logic. Implemented logic on bayesian networks in C++ leveraging existing aGrUM codebase in Python.

Lead of the Google Developer Student Club, Sorbonne University

Aug 2022 – Aug 2023

- Collaborated with Google to grow on-campus community
  - Organized events and networking activities
  - Provided guidance and mentorship to members
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## Achievements

- Sorbonne University - ranked **11<sup>th</sup>** and **1<sup>st</sup>** in the first and second year respectively (4.0/4.0 GPA equivalent)
  - 2022-23 Southwestern Europe Regional Contest (SWERC) - ranked **36<sup>th</sup>** (**7<sup>th</sup>** team in France) at the regional phase of ICPC programming contest (**best historical standings** of SU)
  - 2022 French National Programming Contest (Prologin) - ranked **9<sup>th</sup>** out of 1000 participants in France
  - 2021 French National Programming Contest (Prologin) - ranked **25<sup>th</sup>** out of 1000 participants in France
  - 2021-22 Southwestern Europe Regional Contest (SWERC) - represented Sorbonne University at the regional phase of 2021-22 ICPC programming contest
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## Skills

- **Languages:** English C1 (IELTS Academic 8.0), French C1 (7 years in France), Polish (native)
  - **Proficient:** Python, JavaScript, C++, C
  - **Experienced:** Rust, GLSL, Haskell, OCaml, React, Next.js, Sass, Matplotlib, Numpy
  - **Soft Skills:** Can articulate my ideas clearly, Strong verbal and written communication skills
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## Extracurricular Activities

- Former ACES member at Sorbonne University, actively engaging in competitive programming training and contests. Currently preparing for the ICPC Swiss Subregional Contest at ETH Zurich.
- Generative art with OpenGL (Instagram @shaderfun)

## Projects (sources can be found on github)

### Raymarched Fractal Visualizer - personal project

May 2021 – Oct 2021

- Project: Ray-marching engine developed using GLSL (OpenGL shading language) with driver code in Processing. Engine capable of rendering SDFs (signed distance function) in 3D. IFS (iterated function system) definitions of various fractals can be adapted into SDFs. The engine supports smooth-shadows, multi-reflections, and glow.
- Role: Designed and implemented the engine

### Polyrhythmic Metronome - personal project

Jul 2019 - Aug 2021

- Project: This metronome supports complex polyrhythms using simple and intuitive UI. The project reached top 5 results on Google in the prototype phase (search “polyrhythm metronome” and “polyrhythm generator”). It has remained there ever since. Coded in JavaScript, React (Next.js), CSS (SASS) and Tone.js.
- Role: Identified a niche in the metronome market. Went through multiple prototype iterations, improved each consecutive release based on the user feedback and own tests. Designed, built and deployed the final product.

### Blockchain in C – course work

Mar 2022 - May 2022

- Project: Implementation of a blockchain in C along with RSA cryptographic functions and proof of work consensus algorithm. The algorithm trusts the longest chain leveraging custom minimalist unit testing framework for robustness.
- Role: Led a team of 2 students. Responsible for the project structure, including the testing framework. Aimed at optimizing transparency, development process and speed. Coached team members as needed. Our team ranked 1st for the project implementation.

### Computing Pseudospectra - research project

Jun 2022

- Project: Pseudospectra of matrices are used in many domains including systems stability, differential equations, quantum mechanics, fluid simulations and others. The application contains multiple algorithms for computing the pseudospectra of matrices, as well as the pseudospectral radius and abscissa. An interactive 3D visualization of the singular value decomposition field is also disponible.
- Role: Led a team of 2 students and collaborated with the supervisor in order to extract useful information from publications and write the application. Wrote the corresponding paper in LaTeX.

### Gauss Fast Fourier Transform - personal project

Apr 2021

- Project: Collection of FFT algorithms and naive  $n^2$  Fourier Transform implementations in C++. Testing setup checks for consistency between different algorithms. A visualization of spectra in frequency domain and time domain is provided using C++ bindings for Matplotlib.
- Role: Autonomously researched and implemented algorithms.

### Software ray-tracer - personal project

Dec 2018

- Project: Software (CPU only) raytracer implemented in C++. For simplicity it renders directly into a bitmap image. Supports point-lights, multi-reflections and geometric objects (ex. spheres, planes and discs).
- Role: Autonomously researched and wrote the application while at high-school.

### Custom Language - personal project

Sep 2020

- Project: *GrLang* is a prototype of a custom language written in C++ with the help of LLVM. The solution includes a front-end that consists of a custom Tokenizer, Lexer and a Parser. An incomplete backend generating LLVM IR is present.
- Role: Designed the language and implemented the compiler