

ZAKARIYA OULHADJ

Software Engineer

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 /zoulhadj

 zakariyaoulhadj01@gmail.com

SUMMARY

Aspiring software engineer passionate about low-level programming and high-performance design. I specialise in C and C++, with over six years of experience across these and Python. My primary interests include computer graphics, rendering engine architecture, and systems programming, where I focus on building efficient software from the ground up.

SKILLS

Languages: C11, C++23, Zig, Python

Technologies: OpenGL, Vulkan, DirectX 12, MPI, OpenMP, Django

Tools: Linux, Emacs, Git

Hobbies: Cycling, Hiking, Photography

PROJECTS

Rendering	Game Cross-platform game engine developed in C11, supporting multiple modern rendering APIs and designed for efficiency and low-level engine research. Features include dynamic hot-reloading, memory arenas, command-buffered rendering, and abstraction between game and platform layers.	In Development
Benchmarking	OpenMP Queue Contention Analysis Analysed OpenMP thread performance and scalability of a divide-and-conquer algorithm across three implementations as part of the EPCC11003 course.	https://github.com/ZOulhadj/omp-performance
Simulation	2D Decomposed Cellular Automaton Developed a 2D cellular automata simulation parallelised across MPI ranks and tested on the Cirrus super-computer as part of the EPCC11002 course.	https://github.com/ZOulhadj/cellular-automaton
Rendering	Vulkan Model Viewer and Exporter Developed a real-time 3D renderer using Vulkan with a built-in editor supporting model visualisation, import/export and encryption, as part of my undergraduate degree.	https://github.com/zoulhadj/vmve
Web	Personal Website My personal website was developed using the Django framework that showcases my projects and blog posts.	https://github.com/zoulhadj/zakariyaoulhadj.com

EDUCATION

2024 - 2025	University of Edinburgh M.Sc. High-Performance Computing	First Class (Distinction)
2020 - 2023	University of Roehampton B.Sc. Computer Science	First Class with Honours (Distinction)
2018 - 2020	Kingston College BTEC Level 3 Extended Diploma Computer Science	A*A*A*

EXPERIENCE

2022 - 2023	Computer Science Teaching Assistant and Student Representative • Supported teaching staff by reinforcing course content and assisting students with core concepts. • Acted as a student representative, liaising with academic staff to address concerns and improve the overall student learning experience.	The University of Roehampton
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ACHIEVEMENTS

October 2025	On-Campus Class Medal for Outstanding Achievement • Received the On-Campus Class Medal in High Performance Computing, recognising the highest academic performance in the cohort.	Edinburgh Parallel Computing Centre
June 2025	Top 15 at the ISC 2025 Student Cluster Competition • Ported and tuned the SeisSol earthquake simulator on Bridges-2, optimising MPI communication and OpenMP parallelism with attention to NUMA locality, achieving multi-teraflop performance across four compute nodes. Issued by the International Supercomputing Conference (ISC) and HPC Advisory Council.	University of Edinburgh
October 2020	South Thames College Group Academic Excellence Scholarship • Awarded a scholarship for academic excellence in recognition of achieving the highest grade in my cohort, jointly issued by the South Thames College Group and the University of Roehampton.	Kingston College