

Alex Makelberge

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London, United Kingdom

EDUCATION

Imperial College London

Bachelor of Engineering in Computing

First Year: First Class Honours

September 2024 – June 2027 (Exp.)

London, United Kingdom

Charterhouse School

A-Levels: Maths (A), Further Maths (A*), Computer Science (A*), Physics (A*)*

GCSEs: 9, 9, 9, 9, 9, 9, 9, 9, 9, 7 – Including English Language and Maths

Senior Foundation Scholarship recipient – Awarded to top 1% of students

September 2019 – May 2024

Godalming, United Kingdom

WORK EXPERIENCE

Software Engineering Internship

Optiver - Global Market Making and Trading Firm

June 2026 - September 2026 (Exp.)

Amsterdam, Netherlands

Artificial Intelligence Research Assistant

Similar.AI – AI-powered SEO platform, aligning web content with customer search intent

Leiden, Netherlands

July 2023

- **Evaluated pre-trained Hugging Face Large Language Models (LLMs)** to determine the best model for production, prioritizing high-quality web page embeddings for recommendation engines
- **Implemented Facebook AI Similarity Search (FAISS) Index** to efficiently index, search, and compare embeddings; streamlining the process for large-scale web page analysis
- **Developed k-NN-based Recommendation Engine** using industry-standard Python libraries to efficiently identify the closest matches from embedding data; balancing performance, memory, and computational demands

PROJECTS

Nothing | Winner - Bending Spoons Occam Award, ICHack 2026 | *Electron, React, TypeScript*

February 2026

- **Developed a custom Electron-based web browser** that transforms websites into distraction-free interfaces
- **Built universal DOM adapters** for platforms such as news, search, shopping, and video services for a unified UI
- **Designed templated rendering pipeline** that removes ads, comments, and other engagement-focused elements

Bare-metal Raspberry Pi Room Scanner | *C, AArch64, Raspberry Pi, Git*

June 2025

- **Engineered a bare-metal control system in C**, with motor PWM and sensors for real-time distance scanning
- **Designed data pipeline over Bluetooth UART**, transmitting scan results to a laptop for visualization
- **Developed companion SDL2 GUI in C** rendering sensor data as a live bird's-eye room map

WACC Compiler | *Scala, AArch64, x86, Parsley, CI/CD*

January 2026 - March 2026

- **Developed a compiler** for the WACC programming language with lexing, parsing, renaming, and type-checking
- **Implemented Arm64 and x86 code generation** alongside semantic analysis
- **Built automated testing and CI/CD pipelines**, achieving full correctness across all functionality tests

PintOS Operating System Kernel | *C, Git, GCC, Bash*

September 2025 - December 2025

- **Implemented synchronisation primitives** including semaphores, locks, and recursive priority donation
- **Developed system call interface** with process and file descriptor management, and safe user-memory access
- **Extended the OS** with features such as supplemental page tables, lazy loading, and page replacement algorithms

TECHNICAL SKILLS

Coding Languages: C, Python, Scala, TypeScript, JavaScript, Java, Kotlin, Haskell, SQL, Bash, HTML, CSS, LaTeX

Developer Tools: CI/CD, CLion, Git, Docker, VS Code, PyCharm, IntelliJ, Jupyter, MongoDB, Microsoft Office365

ADDITIONAL INFORMATION

Languages: English (Native), Dutch (Native), French (Basic Working Proficiency)

Awards: 1st Place ICHack 2026, 2nd Place HackLondon2025, BMO1, Oxford Computing Challenge Top 1% Distinction

Hobbies: Rock Climbing, Running, Snowboarding