ROBERT DANCER

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LinkedIn profile

EDUCATION

Computer Science BA (Hons) | University of Cambridge
1st year results: 1st class, ranked 4th/121
2023 – 2026

A Levels: Further Mathematics A*, Mathematics A*, Computer Science A*, Physics A*
2021 – 2023

GCSEs: 10 at grade 9, including English & Maths
 2019 – 2021

EXPERIENCE

Summer Research Project, Institute of Astronomy & Department of Applied Mathematics and Theoretical Physics at the University of Cambridge
SUMMER INTERNSHIP, JUN 2024 – AUG 2024, USING JULIA
Over the summer I worked with Prof. Miles Cranmer to explore the potential of shared sub-expressions within symbolic regression expression trees. I worked on the PySR package (https://github.com/MilesCranmer/PySR), one of the most popular symbolic regression tools. My implementation of expression DAGs allowed for both an asymptotic performance improvement in expression evaluation and regression training, and allows for more advanced methods of expression mutation which could serve as a gateway to the regression of more substantial underlying expressions.

Sutton Trust Summer School Cambridge Ambassador
WEEK-LONG SUMMER SCHOOL AMBASSADOR WORK, AUG 2024
For this course aimed at disadvantaged young people, I was assisting with both pastoral care of the students and an academic role as a representative of the Department of Computer Science of the University of Cambridge. I was involved with the logistics of moving the students throughout the week and bonding with them, whilst being vigilant regarding safeguarding. As an academic representative, I helped the students during their lab work and answered questions regarding computer science and university life.

Cambridge Ellis Unit Summer School on Probabilistic Machine Learning 2024
WEEK-LONG SUMMER SCHOOL, JUL 2024
I was invited in relation to my summer research project to this prestigious summer school typically accessible only to graduate students and researchers. An array of distinguished experts in probabilistic machine learning lectured across 5 days, with topics ranging from Carl Rasmussen's exploration of Gaussian processes to Neil Lawrence's more philosophical perspective on the current state and future of artificial intelligence.

3D game engine (C++, GLSL)

PASSION PROJECT, 2021-2024, USING C++, GLSL

OpenGL-based 3D game engine, with GLSL shaders (incl. real-time volumetric shadows), VRAM and memory allocator, resource management, asset loading and preprocessing, and client-server networking. Provides a deep layer of abstraction from hardware interaction up to an accessible Lua scripting interface, upon which 3D graphics applications can be constructed.

Peterhouse Admissions Helper

WINTER VACATION WORK, DEC 2023

During the two-week period of in-person interviews in the 2023 admission cycle I stewarded applicants around the college, engaged with and comforted them, and answered queries regarding the college and the application process.

Improved image compression & transmission

PASSION PROJECT, 2023, USING PYTHON

Using FFT and DCT-based algorithms to compress images for network transfer, then when receiving the image reconstruct using iterative reassembly to progressively increase the quality of the image as each wave amplitude arrives, resulting in images 'de-blurring' instead of displaying line-by-line.

Political and Economic Simulation

A LEVEL COMPUTER SCIENCE NEA, 2021-2023, USING PYTHON

A simulated representation of the UK's politics and economy, with emphasis on the interaction between the two. Using the extensive GUI the user can make changes and explore the consequences, which are created dynamically based on mathematical models. As a component of my A-levels this project was awarded a mark of 98%.

Upcoming: Optiver & Cambridge Trading Academy (application accepted)

ALGORITHMIC TRADING INSIGHT PROGRAM, OCT 2024 – NOV 2024, USING PYTHON

SKILLS & QUALITIES

- Experience in object-oriented and functional programming
- Very familiar with Python and Java
- Good experience in JavaScript (web & Node.js), OCaml, C++, SQL, Julia
- Some experience with MATLAB, C#, Lua
- Creative and curious – passionate about theory
- Managing project codebases provided practical experience with git, build tools, and scalable software development
- Effective collaborator with excellent communication skills
- Love exploring new ideas – highly adaptable and a very fast learner
- Dedicated and motivated

OTHER INTERESTS

President of Peterhouse Board Games Society, involving organising weekly meets and managing society finances

Member of Cambridge University Algorithmic Trading Society and Peterhouse Badminton Club