Alex Greenen

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Pragmatic and creative mathematician specialised in applied computation mathematics. Master's graduate from Durham University with an excellent academic record, recognised leadership and problem solving skills. Innovative thinker who excels in uncharted environments. Natively bilingual in French and English.

Education

Master's in Computer Graphics, Vision and Imaging
London, UK | Sept. 2020 - Sept 2021

University College London (UCL)

Current Modules: Computer Graphics, Machine Learning for Visual Computing, Virtual Environments, Introduction to Machine learning, Machine Vision, Robot Vision and Navigation, Acquisition and Processing of 3D Geometry, Inverse Problems in Imaging.

Master's in Mathematics (First Class Degree)
Durham, UK | Oct. 2016 - June 2020

Durham University

First class honours in Year 1 (71%), Year 2 (76%), Year 3 (80%), Year 4 (76%)

- Year 4 Modules: Advanced Quantum Theory, Solitons, Continuum Mechanics, General Relativity, Thesis Project
- Year 3 Modules: Quantum Mechanics, Differential Geometry, Mathematical Biology, Quantum Information, Dynamical Systems, Mathematical Teaching
- Year 2 Modules: Numerical Analysis, Algebra, Mathematical Physics, Mathematical Modelling, Complex Analysis, Analysis in Many Variables, Special Relativity and Electromagnetism
- Year 1 Modules: Discrete Mathematics, Analysis, Calculus and Probability, Linear Algebra, Introduction to Programming, Computer Systems

Baccalauréat S, OIB English
Lyon, France | June 2016

Cité Scolaire Internationale de Lyon

Highest Honours (Mention Très Bien)

- Mathematics and Science Track with Computer Science Specialty
- Baccalauréat with International Option (OIB) - British Section

Research

Master's Thesis: Schrödinger's Fluid and Vorticity Simulation
Durham University | 2019-2020

Research Supervisor: Dr. K. Peeters

The report explores the mathematical underpinnings of incompressible quantum fluids by looking into Clebsch variables and how they allow for an insightful representation of vortical structures in fluids. Notably, I investigated a map taking vortex lines to points on S^2 in an organised fashion, then programmed an algorithm to efficiently evolve these fluids numerically. This thesis received an 85% mark.

Quantum Error Correcting Codes (AdS/CFT)
Durham University | June-July 2019

Research Supervisor: Dr. I. Garcia Etxebarria

Researched how the information recovery mechanism of perfect codes (i.e. HaPPY) could explain bulk AdS information reconstruction in cases of loss of boundary CFT information. Authored paper comparing bulk reconstruction usefulness on various graphical tilings of the hyperbolic plane using various perfect codes.

Force-Free Magnetic Fields in Curvilinear Coordinates
Durham University | June-July 2018

Research Supervisor: Dr. C. Prior

Funded by the Royal Astronomical Society

Conducted research on analytic form of force-free magnetic field in tubular coordinates, with the aim of studying braided magnetic fields. Manipulated differential geometry with euclidean tensor-metrics in Wolfram Language and simulated the field using Python. Authored a paper summarising my work and findings.

Projects

Game Development (Unity and Blender)
Personal Project | June-Present 2020

Developing a playable 3D game environment. Creating custom assets (Blender), material shaders (HLSL), grass generation/movement/interaction (C# scripts and Compute shaders), player UI and custom post-processing effects.

Ray-Tracing Rendering Algorithm
Personal Project | Summer 2019

Developed a graphics rendering programme in C++ from scratch supporting ray tracing, texturing, and materials. Support for arbitrary meshed shapes in .obj format.

DurHack 2018 Team Leader
Durham Hackathon | December 2018

Led and managed a team of four to conceptualise, plan and launch the 'Get Help' Mobile App. Developed using Swift, PHP and MySQL. Includes live messaging and posting system integrated into modern interface.

Leadership

Building Steering Group Member
Durham University | 2018 - 2020

Represented student body on University Board concerning the development of the New Mathematics and Computer Science Building Project.

Mathematics Teaching Assistant
Durham University - Mathematical Teaching | 2018 - 2019

As part of my mathematical teaching module, I received firsthand experience of being a teacher and taught a Year 7 class at Durham Johnston school. I took part in teaching the students, designed problems, and prepared and marked exams.

DurHack 2017 Event Manager
Durham Hackathon | 2017 - 2018

24-hour Major League Hacking (MLH)-affiliated hackathon where attendees collaborate on software and hardware projects. Managed a team of five students. Procured and negotiated sponsorship agreements, and arranged venue logistics, catering, advertising, attendee registration, workshops and guest speakers. Signed-up 12 sponsors, raised over £11,000 in sponsorship funding, and attracted 100+ attendees.

Fine Art Sessions Manager
Durham University Art Society | 2017 - 2018

Led and organised weekly art sessions to introduce various media to students. This involved planning the sessions, purchasing the materials, invoicing, and prospecting for guest artists. I also taught sessions that required me to prepare/ make teaching materials, study the medium and develop my presentation and communication skills.

ILYMUN Event and Logistics Manager
International Lyon Model United Nations | 2016

Secured and managed contracts with venue and catering for Model United Nations (MUN) conference involving 400+ attendees from 7 different countries debating political topics over three days.

Awards and Recognition

Ian Graham Award
Durham University | December 2018

In recognition of academic achievements and all-round contributions to the life of the university.

Thorp Scholarship
Durham University | December 2018

In recognition of academic attainment and good moral character.

Student Academic Representative Award
Durham Student Union | June 2018

Voted by second-year students as the best student representative at the University of Durham, as I actively assisted maths students and faculty to resolve issues during protracted faculty strike.

National Inter-Varsity Dancesport Championship (IVDC)
Blackpool | February 2020

Ranked third best beginner in the UK with 3rd place in Jive, 4th place in Cha-Cha and 8th place in Quickstep.

Hackathon Category Winner
Durham Hackathon | January 2017

Won the W@terstons-sponsored project at 24-hour MLH hackathon.

Academic Merit Award
Auvergne Rhône-Alpes Region | June 2016

Awarded to students attaining the highest level of academic achievement in the region.

Computer Languages

Python - *Fluent*

Java - *Fluent*

Swift - *Fluent*

C# - *Fluent*

C++ - *Proficient*

HLSL - *Proficient*

R - *Intermediate*

PHP & MySQL - *Intermediate*

HTML & CSS - *Intermediate*

Assembly Code - *Intermediate*

Languages

English: Native speaking/writing

French: Native speaking/writing

Spanish : European B2 level

Citizenship

France

United States of America