

## ALEX GREENEN

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### PROFILE

Third-year University of Durham mathematics student seeking a career in mathematical physics or mathematical modelling. Strong mathematics and computer science academic record, and proven leadership and problem solving skills. Innovative thinker who excels in uncharted environments. Natively bilingual in French and English.

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### EDUCATION

- Oct. 2016-Present    **MSci in Mathematics**, due to graduate June 2020  
*University of Durham | Durham, UK*  
**Received Firsts on Year 1 and Year 2 exams**
- Current Year 3 Modules: Quantum Mechanics III, Differential Geometry III, Mathematical Biology III, Quantum Information III, Dynamical Systems III, Mathematical Teaching III
  - Year 2 Modules: Numerical Analysis II, Algebra II, Mathematical Physics II, Mathematical Modelling II, Complex Analysis II, Analysis in Many Variables II, Special Relativity and Electromagnetism II
  - Year 1 Modules: Discrete Mathematics I, Analysis, Calculus and Probability I, Linear Algebra I, Introduction to Programming I, Computer Systems I
- June 2016    **Baccalauréat S, OIB English - Highest Honours (Mention Très Bien)**  
*Cité Scolaire Internationale (CSI) | Lyon, France*
- Mathematics and Science Track with Computer Science Specialty
  - Baccalauréat with International Option (OIB) - British Section

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### COMPUTER SCIENCE LANGUAGES & SKILLS

- **Java**: Introduction to Programming I (University of Durham)
- **Python**: Mathematical Modelling II (University of Durham)
- **Swift**: Personal study and projects
- **Secondary Languages**: MIPS Assembly Code, MySQL, PHP

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### PROJECTS & EXPERIENCE

- December 2018    **Durham Hackathon Team Leader** *DurHack Hackathon | Durham, UK*  
Created 'Get Help' Mobile App. Group project developed using Swift, PHP and MySQL. Includes live messaging and posting system integrated into modern-looking mobile app.
- June-July 2018    **Undergraduate Research on Analytical Form of Force-Free Magnetic Fields in Curvilinear Tubular Coordinates**  
*Research Supervisor: Prof. C. Prior, Department of Mathematics | University of Durham*  
*Funded by: The Royal Astronomical Society and St Chad's College*  
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 non-diagonal tensor-metrics.
- January 2018    **Paper on the Brusselator Reaction-Diffusion Equation in the Context of Morphogenesis**  
*University of Durham | Durham, UK*  
Paper focuses on solving complex PDEs using normal modes around homogeneous solutions to understand stability as well as general behaviour of the Brusselator Reaction-Diffusion Model. Paper also provides insight on how this equation models animal pattern development.
- Summer 2017    **3D Time-evolving Perlin Noise Generator** *Personal Project*  
Developed deep knowledge in interpolation in several dimensions, programming custom geometry objects, and optimising the code to increase efficiency. Programmed in Swift.
- Summer 2017    **3D Time-evolving Cloth Simulation** *Personal Project*  
Created a 3D cloth simulation program in Swift. Have developed an understanding of discretising surfaces into meshes, modelling elasticity and other forces in such meshes, programming custom geometry objects, and optimising the code to increase efficiency.
- June 2017    **3D Printing Workshop** *University of Durham*  
Learned how to model and print complex mathematical shapes during this five-day theoretical and hands-on workshop.
- January 2017    **Durham Hackathon Team Leader** *DurHack Hackathon | Durham, UK*  
Created 'Get Home Safe' web app. Group project developed using Node.js, HTML, JavaScript and MySQL. Allows users to visualise a customised map with overlaid datasets procured from a custom database.

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## AWARDS

December 2018	<b>Ian Graham Award</b>   <i>University of Durham</i> In recognition of academic achievements and all-round contributions to the life of the university.
December 2018	<b>Thorp Scholarship</b>   <i>University of Durham</i> In recognition of academic attainment and good moral character.
June 2018	<b>Student Academic Representative Award</b>   <i>Durham Student Union</i> 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.
January 2017	<b>2017 DurHack Category Winner</b> Won the W@terstons-sponsored project at 24-hour MLH hackathon.
June 2016	<b>Academic Merit Award</b>   <i>Auvergne Rhône-Alpes Region, France</i> Awarded to students attaining the highest level of academic achievement in the region.

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## LEADERSHIP

**Steering Group Member for Mathematics and Computer Science New Building Project (2018 - current)**  
*University of Durham*

**Second and Third-Year Mathematical Sciences Student Representative (2017-2019)** | *University of Durham*

**Art Society Fine Art Room Manager (2018-2019)** | *University of Durham*

**Art Society Fine Art Sessions Manager (2017-2018)** | *University of Durham*

- Led and organised weekly art sessions to introduce different 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.

**DurHack 2017 Event Manager** | *Durham, UK*

- 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.

**Model United Nations (MUN)**

- ILYMUN 2016 (International Lyon MUN Conference): Conference Event Manager.
- ILYMUN 2015: US delegate on the issue “*Millennium Development Goals*”, which enhanced my debate and negotiation skills.

**Duke of Edinburgh International Award** - Silver level

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## INTERESTS & ACTIVITIES

- **Fine Arts** - I am an amateur artist proficient in watercolour and inks, and capable in acrylic, oil, and pencil. I also teach art classes at the University of Durham Art Society.
  - **Piano**
  - **Rock-climbing, rafting, horseback riding, choir.**
  - **Intercultural adaptability** acquired through living in US (8 years), Saudi Arabia (4 years), France (5 years), and UK (presently).
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## LANGUAGES

- **English and French** - natively bilingual (written and oral)
  - **Spanish** - B2 level (per the Common European Framework of Reference)
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- **Citizenship:** United States, France