

Recent theoretical physics Ph.D. graduate and CryptoHack founder, interested in applying my strong skills in mathematics, programming, and analytic problem-solving to defining, implementing and researching cryptographic protocols.

EDUCATION

Ph.D.	Department of Mathematics, University of Liverpool	2016–2020
M.A.St.	Master's in Mathematics, University of Cambridge (First Class)	2014–2015
M.Phys.	Master's in Physics, University of Exeter (First Class)	2010–2014

EXPERIENCE

CryptoHack Co-Founder 2020–*present*

- Co-founder of [CryptoHack.org](https://cryptohack.org), a gamified learning environment with an emphasis on breaking insecure implementations of modern cryptography
- Designed lessons and challenges exploring weaknesses in common protocols such as: RSA, Diffie-Hellman key exchange and (EC)DSA
- Currently host 140+ challenges to 22,000+ users with a total of 210,000+ solutions submitted
- Regularly write blog posts explaining CTF challenge solutions and their mathematical foundations

Northrop Grumman Software Engineer 2020–*present*

- Researched and developed a novel data manipulation tool, delivered to our customer with accompanying technical white papers
- Developed lectures and lab environments on web exploitation (with a focus on XSS) as part of an upskilling course designed for accelerated learning of a customer's growing workforce
- Experienced with project development using the Atlassian Suite, performing regular code-reviews with Git (GitHub and Bitbucket)

University of Liverpool Ph.D. Student 2016–2020

- Communicated my research at international conferences, giving seminars and designing posters
- Published two research papers in JHEP, the top journal in my field ([1905.09167](#)) ([2008.06929](#))
- Taught popular classes on Mathematics and Physics to undergraduate students
- Founded and partook in a PhD seminar series, broadening my understanding of advanced topics

SKILLS

- Exposure to **cryptographic auditing** and attack implementation from self-study, currently focused on asymmetric cryptographic protocols
- Proficient with **Python**, **SageMath** and **Mathematica**, familiar with **C** and **Rust**
- Particularly interested in elliptic curve cryptography and the recent developments in isogeny graphs
- Active CTF player for cr0wn (top UK team) and the highly competitive Organizers team. Founder of the CryptoHackers team, a group of players who met through CryptoHack.
- Founder of Neutral Spaces, a literary website which offers writing projects and portfolio design for 500+ international writers

PRIZES

- GTA Studentship funding Ph.D. research 2016–2020
- Gertrude Mather Jackson prize for highest maths performance in Girton College 2015
- Jubilee and Millhayes Science Scholarships for academic excellence 2010–2014