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# Alex Raymond Hyman

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**Neurosymbolic AI and Formal Verification PhD student at the University of Edinburgh (September 2025 – 2029).**

**Experienced programmer** in languages **Python**, **Isabelle**, **R**, and **Haskell**. Confident user of programming libraries e.g., NumPy, TensorFlow, Pandas.

**Machine learning enthusiast.** Exploring proof-assistant software such as Lean & Isabelle and obsessed with the axiomatic method.

## EDUCATION

### **The University of Edinburgh** – Artificial Intelligence, *PhD*

Current – February 2029

Conducting postgraduate research in the AI lab. Using proof-assistant software e.g., Lean & Isabelle in tandem with LLMs to see if we can improve logical LLM responses by forcing them to interact with a theorem-proving language. Also interested in formalising temporal logics.

### **The University of Edinburgh** – Mathematics, Integrated Masters, 1<sup>st</sup> class

September 2020 – May 2025

**Masters Dissertation:** Formal Verification of Neural Networks in Isabelle (83.5%).

**Awarded** Arthur Erdélyi Prize for **distinguished exam performance** in 3<sup>rd</sup> year.

**Awarded Statistics and Probability Prize** from Institute & Faculty of Actuaries.

**Studied math at University of British Columbia, Vancouver** for year abroad.

## EXPERIENCE

### **Hymans Robertson, Glasgow** – Actuarial Private, Summer Internship

July 2023 – August 2023, 8 weeks

- Furthered understanding of **actuarial concepts**, performed **technical calculations** and **collected TCFD metric data** to hold funds accountable for their **climate-related impact**
- Increased efficiency/functionality of **Excel sheets** via **VBA macros**

### **AI Modelling Lab, Edinburgh** – Summer Research Internship

June 2023 – September 2023

- **Implemented** and formalised a lightweight **differentiation engine** for **neural networks** in theorem proving/functional language Isabelle

- Research supervised by Prof. Jacques Fleuriot, Director of the **Artificial Intelligence and its Applications Institute** at University of Edinburgh

### **Gordon & Noble, Sheriff Officers, Glasgow – Office Administrator**

June 2021 – December 2021

- Personally designed, implemented, and sold Python programmes which automate Microsoft Excel tasks saving hundreds of hours of manual work
- Constructed legal documents for debt collection purposes

### **Canyon Creek Summer Camp, California – Camp Counsellor**

June 2022 – August 2022

- Helped children flourish both physically and socially at camp. Acted as an **educator, organiser and leader** for large groups
- As one of few international counsellors, learnt to assimilate into another culture and work alongside people of very different backgrounds

### **Credit Suisse, London – Work Placement**

October 2018, 1 week placement

- Experienced the inner workings of **backend programming in investment banking**
- Engaged with trading methods in the Forex e.g., high frequency currency trades, and **modern risk analysis techniques**

### **Tutoring**

October 2018 – Current

- Taught higher level maths privately and on **personal maths YouTube/TikTok channel**

## **OTHER EDUCATION**

### **Hutchesons' Grammar School, Glasgow**

August 2014 – June 2020

Advanced Highers – 3 A's (Pure Mathematics, Mathematics of Mechanics, Physics)

Highers – 7 A's (Mathematics, Physics, Computing, Chemistry, Economics, English, Modern Studies)

## **OTHER AWARDS**

Hutchesons' Grammar School, School Prize for Mathematics (2020).

British Maths Olympiad, Bronze Medallist (2020).

Rotary Club Public Speaking Finalist (2018, 2019).

## **EXTRA-CURRICULAR/HOBBIES**

Lead actor in 2 shows & 2 short films. Avid rock climber, skier & Munro bagger. Cryptic crossword fanatic.