JACOB INWALD

Computer Science Student

coming soon
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SUMMARY

I am a Computer Science student at the University of Edinburgh, with a strong background in programming. At university, my course has required me to acquire a breadth of knowledge, from PCAP analysis to deep learning. My various positions in teaching, both inside and outside of computer science have taught me how to communicate my knowledge of a subject effectively. I have excelled in performing in high pressure environments, and my experience competing on a national level has required me to work well within a larger team. I enjoy making programming projects that require applying complex algorithms to interesting problems. While I have enjoyed my time at university, *applying* this academic knowledge to real-life high-stakes scenarios is something I believe I would excel in.

SKILLS

Python	★★★★★
Java	★★★★☆
Docker	★★★★☆
Linux	★★★★☆
Haskell	★★★★☆
C	★★★☆☆
Bash	★★★☆☆

EDUCATION

2021 - 2025 — **BSc (Hons) Computer Science - predicted 1st** — **University of Edinburgh**
Modules include: Computer Security, Reasoning and Agents, and Machine Learning

2019 - 2021 — **Secondary Education** — **JCoSS, London**
4 A-Levels at grade A* in Mathematics, Further Mathematics, Computer Science, and Physics

2017 - 2019 — **10 GSCEs at grade A* and A** equivalent** — **JCoSS, London**

PROJECTS

Security Research — **Honours Project - Containerizing Exploits** — **github available on request**
For my honours project, I am working on containerizing CVE exploit-code pairs to investigate `gcc`'s security hardening features. This has required me to do extensive research into security hardening methods, and research a variety of different memory corruption errors in C. As part of this project, I have had to replicate years old security vulnerabilities, often with little documentation. As such, this project has honed my Linux, Dockerfile, C and Bash skills, and taught me a lot about the intricacies of exploits.
`makefile` / `C` / `docker`

Classification — **Melanoma Classification** — **github.com**
For one of my final-year courses (Machine Learning Practical), me and 2 coursemates trained several deep-learning models for melanoma classification. I wrote the framework that allowed us to successfully train both large transformer based models (ViT-L, SwIN-M), as well as the EfficientNetB0-B7 models across multiple GPUs. We then presented a report comparing the efficacy of these different approacheds to classification.
`python` / `slurm` / `deep-learning`

Hash Cracking — **pwdtools** — **github.com**
A library of password-related tools, from cracking plaintext passwords to cracking hashes. I also included a GPU-accelerated brute-force password cracker, achieving a rate of 4 billion passwords tested a second.
`python` / `metals-framework` / `Obj-C`

Classification — **Optical Character Recognition - A-Level Project (achieved 98%)** — **github.com**
I wrote a neural network that achieved 90% accuracy on the MNIST (Modified National Institute of Standards and Technology) character set. To make this a challenge, I did not allow myself to use any external libraries, apart from one for random number generation. This meant that I had to write a python-based machine learning backend from scratch.
`python` / `machine-learning`

EMPLOYMENT

9/2024 – 12/2024 — **Course Instructor - Introduction to Computation** — **University of Edinburgh, Edinburgh EH1**
I led tutorials for a first year university course - Introduction to Computation. This course focused on functional programming and computational logic. I taught first year university students how to program in Haskell, as well as marking weekly tutorials and giving feedback and guidance. This required a deep understanding of functional programming in order to teach it at a university level.
`teaching` / `functional programming` / `haskell`

7/2024 – 9/2024 — **Tech Lead - Cyber Summer Placement** — **AtkinsRéalis, London SW3**
I worked in a small group to create an automated threat report generator. This program worked by scraping data from trusted sources, structuring and linking it, and then crafting prompts for an LLM to produce a legible and correct report. As the Tech Lead on the team, I had to work at all levels of the project, but I mainly focused on data collection and linking. An additional part of my role was setting up and organizing our GitHub contributions to ensure smooth development.
`management` / `teamwork` / `python` / `OSINT` / `risk management`

7/2023 – 9/2023 **Bartender and Waiter** **Greenmantle, Greenmantle Group, Edinburgh EH8**

I ran a one-man box bar during the Fringe Festival in Edinburgh. My role was to manage this bar, maintain the correct levels of stock, ensure that the customer experience was as good as possible, to close and open the box bar. This required initiative as well as good management of resources. After the Fringe was over, I worked as a bartender at other pubs part of the Greenmantle Group, which required an ability to adapt quickly to new environments as well the ability to mesh well with new colleagues and co-workers.

`management / teamwork / high-pressure`

VOLUNTEERING

1/2018 – 7/2018 **Teaching Assistant** **The Castle Climbing Centre, London N4**

I assisted in teaching climbing techniques and safety to children from ages 9-15 every Saturday. This role involved leading warm-ups, creating engaging activities, and managing classes of 6 children to ensure their safety.

`teaching`

EXPERIENCE

7/2021 – 7/2021 **Work Experience – Software design** **HELIX Centre, Imperial College London, London W2**

I was involved in projects, coding a program to quantify differences between medical guidelines. I had to think critically and learn and adapt to complex tools in a short period, this included becoming proficient with the SNOMED database, made by the NHS.

`python / database`

2019 **Google Code In** **Google**

I participated in the code-in where I had to complete various tasks for different companies. This ranged from creating boot-up scripts for Fedora to writing a simple zipcracker. This gave me some insight into how open-source projects worked properly.

`python / bash / open-source development`

AWARDS

2021 **Climbing Wall Instructor Training** **Mountain Training**

I learnt how to teach climbing and safety to new climbers effectively, learning how to lead sessions well.

`teaching`

2019 **DofE Silver** **Duke of Edinburgh**

HOBBIES

2021 – current **Edinburgh University Climbing Team** **University of Edinburgh**

- Competed in British University Climbing Series 2022, 2023, and 2024 event.
- Competed in National Universities Lead and Speed CLimbing Competition 2023.
- Organized and ran coaching sessions for the Edinburgh University Mountaineering Club

`high-pressure performance / team-work / teaching`

2019 – 2021 **The Castle Competition Squad** **The Castle Climbing Centre**

- Competed in the national British Mountaineering Club Youth Climbing Series, coming 4th at one event.
- Volunteered as an instructor for the younger classes.

`high-pressure performance / team-work / teaching`

2013 – current **Guitar and Piano** **Self-Taught**

I have played guitar since I was 10 and taught myself jazz piano over lockdown. I have found comfort in music and take pride in being able to express myself with it.

`music`