Melvin Abraham

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I am a 4th year Computing student looking for a future in cyber security research. I am passionate about security, especially creating useful solutions that help someone's way of life making aspects more intuitive and usable. My goals are to explore and innovate in making security more usable to the general public specially in relation to accounts and authentication.

Computing Related Work Experience

Intern Cyber Security Researcher: Heriot-Watt University
July 2020 – October 2020
Created a web app using Angular to collect account structure data used to analyse the how protected a specific person is, combined with potential attack scenarios an adversary can use to gain maximum control for minimal effort. I stayed up to date with research in the field to keep the project robust. Another responsibility I had was to create designs maintaining the privacy and anonymity of participants, keeping personal data and sensitive data separate. This project has allowed myself to learn new technologies as well as apply rapid prototyping methodologies.
To see the code: click here

Information Security Lab Tutor: University of Dundee
October 2020 – Dec 2020
I was responsible for multiple weekly technical labs for 80+ students. As part of this role, I created video content explaining cyber security concepts such as: encryption, web attacks, virus creation/detection and modular arithmetic. I taught students complex concept of the module 1:1 such as symmetric/asymmetric encryption, protocols, hashing and passwords.

Education

Applied Computing BSc (Hons) *(Predicted First)*
University of Dundee (4th year) *graduating in 2021*
Modules Include:

- ***Users and Interfaces* UX/UI** - I gathered requirements using qualitative research methods (interviews/focus groups) then subsequently designed accessible and usable interfaces for underrepresented population groups.
- ***Object Orientated Design and Development*** - I created a full design specification for a game using OOP design principles/patterns in UML within the context of different methodologies such as Waterfall and Agile.
- ***Multi Paradigm Programming*** – I created data structures from first principles such as Linked Lists, Queues and Hash Tables in C and C++ with emphasis on error checking and defensive programming.
- ***Information Security*** - I applied cryptography and security protocols to create secure programs that defends against attacks and vulnerabilities such as Injections and relay attacks.

High School (Highers) AAAB
St Augustine's RC High School, Edinburgh *Graduated 2017*

Key Skills

My main language is **Python.** I also have experience in:

- C# / C++/ C
- HTML/CSS/CSS Frameworks
- SQL/MySql /PHP
- Java / Scala
- Git/BASH
- JS/TypeScript/JS Frameworks
- PHP
- UML/Prototyping

Notable Projects

- **Login System and Penetration Testing** – I worked as part of a software development team to create two login systems in C++. One system was secure with no vulnerabilities and one had a hidden obfuscated backdoor allowing entry into the system. I conducted penetration testing on other login systems from the class to find vulnerabilities that could be exploited.
- **Accessible User Centred Website**– Using a rapid prototyping environment to create high fidelity website prototype for clients who lack experience using computers. Quantitative techniques such as focus groups, interviews were used to understand the user clearly and what their specific needs were to aid how best we could design for them.
- **Protecting Older Adults Online** – My Honours Project works to improve the resilience of older-adults towards cyber-security attacks by developing methods to communicate account security weaknesses and advising on appropriate protections, through novel visualizations. For more detail: click here

Other Computing Related Experience

President of Dundee University Computing Society (DUCS)

I lead a team of students that create social and technical events for the collective Dundee Computing Student body. I have increased membership of this society from 30 to 200+ members and have increased the number of activities that the society organises. My aim has been to create a positive and effective environment within my team, to run events that bring students and members of industry together. Events such as skills workshops with speakers from the university along with experts from industry. Social events working with local businesses around Dundee, Coding challenges with external tech companies and our own annual Hackathon. My role includes:

- Project Management
- Public Speaking
- Events Coordinating
- Long term planning
- Outreach
- Leadership

Awards: Most Progressive Society- DUSA Annual Awards 2020

Strathmore Trophy Mentor

I guided 16 teams of secondary school pupils to come up with accessible designs for those who struggle speaking. I advised on accessible design and helped refine the ideas phase to come up with a realistic product to submit for judging.

STEM Ambassador

Other Work Experience

- **Royal Air Force (Reserve): Officer Cadet with ESUAS**

Sept 2017 – Aug 2020

I am responsible for maintenance and upkeep of communication channels for a squadron of 90 people. I have attended leadership courses which were applied in events planning and exercises to achieve mission goals. This has taught me determination, to think clearly under high pressure situations and contingency planning for when things do not go to plan.

- **University of Dundee: Student Ambassador**

Jun 2018 - Present

This role requires me to lead people and manage visitors to make sure they get the best experience possible specifically tailored to them. This role has taught me how to put forward information to those who are little to no-knowledge on the topic. I did this by finding out what their goals were and trying my best to achieve their goals, along the way I would introduce topics the visitor didn't know they wanted by trying to look from a wider perspective on the situation- seeing the bigger picture.