JOSEPH CHENG

PROFILE

I am a diligent and driven individual with knowledge of various programming languages and concepts, as well as a burning passion for cybersecurity concepts like penetration testing and cryptography. I have strong teamwork and independent research skills and a curiosity for the underlying mathematics of many computer science technologies.

EDUCATION

University of Cambridge BA Computer Science *October 2019 - Present*

Relevant year 1 modules: Digital Electronics, Object-Oriented Programming, Operating Systems, Software and Security Engineering

Relevant year 2 modules: Computer Design, Logic and Proof, Economics Law and Ethics, Further Java, Programming in C and C++, Security

Relevant year 3 modules: Principles of Communications, Advanced Computer Architecture, Advanced Operating Systems, Cryptography

Year 1: 83% (no classification/rank given due to decisions by the university about coronavirus)

Year 2: Class I (Ranked 7/123)

William Farr C of E School: A-Levels *September 2017 - June 2019*
Mathematics (A*)
Further Mathematics (A*)
Physics (A*)
Computer Science (A*)

William Farr C of E School: GCSEs *September 2015 - June 2017*
9, 9, A*, A*, A*, A*, A*, A, 7

PROJECTS

Windows Process Injector
Using C, C++, and x64 assembly, I wrote a tool that implemented many process injection techniques such as reflective injection, hooking, module stomping, and gargoyle. Since the original gargoyle PoC was only for x86, I had to write novel code to implement it for x64.

3D Boids Simulation
Using C++ and OpenGL, I wrote a 3D boids (flocking artificial birds) simulation optimised using an octree data structure and utilizing geometry shaders for more performance speedups, making it easily capable of handling 2000+ boids at 60fps.

Neural Network Classical Cipher Identification
Using Python and Tensorflow, I wrote a program that generates a dataset of enciphered text using various enciphering methods, and using this trained a neural network that could identify the enciphering method used on a given ciphertext.

EXPERIENCE

F-Secure Security Consulting Internship *June 2021 - September 2021*

This internship involved an intense month of training in various cybersecurity topics, covering appsec, netsec, the cloud, cryptography, and more, and culminated in a 6 week research project where I independently produced a tool (the Windows Process Injector), as well as a blog post published on the internal blog that detailed process injection and my tool, and also a presentation given to the entire consultancy on my project.

INTERESTS

Capture the Flag (CTF) competitions
Participated/participating in a number of CTF competitions such as picoCTF and C2C CTF, requiring understanding of cryptography, knowledge of binary exploitation, and programming skills. This involved undergoing heavy amounts of independent research and problem solving skills against the clock.

Wargames
Completed a number of wargames, such as those offered on OverTheWire, requiring comprehensive knowledge of Unix tools, cryptanalysis, and web security.

SKILLS

Programming	C, C++, Python, Java, OCaml
Software & Technologies	LaTeX, Unix Tools, Git, OpenGL, Microsoft Office

ACHIEVEMENTS

Medal winner in the 2016 National Cipher Challenge and achieved full points in the 2018 National Cipher Challenge. This required collaboration in a team and having to problem solve under pressure to very tight deadlines.

Hosted a programming club at my school for a year, allowing me to teach younger students about concepts within programming, as well as working with peers on computing projects.

Received the Distinguished Talk Award from the Churchill College Computer Science Talks in the 2020/2021 year for a talk on searchable encryption.

EXTRA-CURRICULAR

I am a dedicated piano player, winning two silver medals in competition.

I mentor and tutor state-school students through the Zero Gravity platform, helping to provide access to the top UK universities to those who might not have it otherwise.