Jake Nelson

Full stack

Software Developer

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About Me

Nice to meet you, I am Jacob Nelson.

I have programmed since I was 12 years old in various languages. In 2010 using GML (Game Maker Language).

Once upon a time I taught a game development class at Halliford School. I have an interest in Integrated Electronics, Web Development, Web Scraping, Artificial Intelligence, Cyber Security and API development.

I feel I have achieved a fair amount for my age (1999-02-09), this includes playing at Ronnie Scott's "Big band in a day", achieving ABRSM Grade 6 Piano Qualifications, winning CISCO's 2014 Red Button Challenge for best business case, and intervening in my crippling addiction to coffee (*well not really!*).

I enjoy fulfilling strangers' Photoshop requests on (r/PhotoshopRequest) and have the ability to edit Photos and Videos using Lightroom/ Photoshop and After Effects respectively. As a hobby, I like to play Badminton, Table tennis and Chess. I also enjoy making music via my Drum Machine, Retro Synthesizers and Mixing Board, and at school I did a **public speaking** talk on *neural networks* and their inner workings after I tried programming my own from scratch in Python.

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Skills

I have experience using **PHP**, Bootstrap, Codeigniter, **FuelPHP**, **MYSQL**, **Javascript**, JQuery and **CSS**. In the last few years I've been asked to work on countless other projects including **REST API** development using Boost/Beast in **C++** and Responsive App Design using **node.js** and **mongoDB**.

I have strong communication skills and get along well with just about anyone. I work well in a team environment, and have the patience to help others in their tasks. I'm always happy to learn new technologies and relish the challenge.

I am also particularly adept at using Python and Java for projects that require rapid prototyping.

Experience

Freelance / Developer and Cyber Security Exploit Researcher
July 2021 - Present

I worked with github.com/McSpooder (Danny Wilde) on **stocktools.io** (now defunct) a demo of the concept can be viewed here.

We decided it plausible to mass scrape tweets from twitter (link), classify the tweets and then use them for Stock or Crypto market predictions.

We can currently scrape at a rate of 2000 tweets p/s and I plan to implement Multiple User Agents, Multiple Proxies, Threading and a Dashboard using CodeIgniter, PHP, Javascript, HTML, CSS, Bootstrap, MySQL, C++ and Python. I decided to start my own company called Stocktools so began work as a Sole Trader, but before this happened I decided to go to University.

Cambridge Quantum Computing / Web Developer
Jan 2020 -Jun 2021

During my time at CQC we mainly focused on "Quantum Entropy" – for Quantum Encryption. I was part of the Cyber Security division coined "IronBridge".

I developed many applications including IronBridge Messenger, an application using Post Quantum Algorithms for communication between two parties, in a more secure way than current end-to-end encryption such as WhatsApp, Telegram or Signal.

During my time at CQCL I was the sole web developer and in charge of developing and maintaining applications from start to finish.

This included the following:

- **IronBridge Odin**: An application demonstrating post quantum encryption (PQE), AES and message signing.
- **IronBridge Messenger**: An end-to-end encrypted chat application using Post Quantum technology from NIST.
- **ARQ**: (Amplified Randomness using Quantum) - Hosted and set up by yours truly, this AWS instance ran a script to extract true entropy from pseudo random numbers using (CQCL)'s patented quantum-entropy device.

Unfortunately I am unable to share source code for any of the applications I developed while at this company. In addition, visitors were required to sign a NDA.I also worked on a few other projects requiring me to create my own API written in C++ using boost/beast, a C++ development library, and prior working on an in-house API requiring me to code using C#.

My role also included managing day-to-day operations of servers hosted via AWS, Azure and in-house hosting.

We shared our office space with another company, in conversation I (personally) spoke to the staff about cyber-security.

They tasked me with extracting IMSI credentials from phones. This can be described as white hat hacking. After an all-nighter, I found multiple solutions.

My full write-up can be viewed here.

Evident Software / Front-End Web Developer

Mar 2019 – Dec 2019

During 2019 I worked at Evident Software based in Croydon. Over that period my role expanded to building database models and designing a restful API for mobile developers to utilise. I encountered many interesting projects based around responsive web design and built projects ranging from graphing applications to a job routing application; to aid in Asset Tracking. During this time I used and became proficient in the following technologies; PHP, Javascript, HTML, CSS, Bootstrap, CodeIgniter, SVN, Linux and Python

Freelancer / Freelance Web Developer

2016 - 2018

Whilst studying, I worked on a number of freelance projects for people around the globe via freelancer, including an art website named crearts.

Royal Holloway - University Of London / Computer Science BSc

Sep 21 - Dec 23, EGHAM, London

In an unfortunate turn of events I had pneumonia and following this a surgery on my back, the duration lasting over 6 weeks. This meant I could not complete the first year of my course, delaying the situation another year. I have decided to completely refresh and continue work at a company I enjoy with work that intrigues me.

Hull University / Computer Science and AI (Year 1)

2017 - 2018, HULL

After successfully completing the first year at Hull University, I decided to take a year out to experience work in the field.

Halliford School

2017 - A2

Computer Science (C), Music Technology (B).

2016 - AS

EPQ (B), Maths, Physics

2015 - GCSE

Computer Science (A*) , English Language (A), English Literature (A), Maths (A), Physics

(B), Chemistry (C), Biology (C), Geography (C), Music.

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Education

Awards

Grade 6 Piano Spring 2017 (Pass)

Grade 5 Piano Autumn 2013 (Pass)

Grade 5 Practical Musicianship Summer 2016 (Pass)

Grade 4 Piano Summer 2012 (Distinction)

Grade 1 Alto Saxophone Autumn 2013 (Pass)

CISCO Red Button Challenge 2014 (Business Case Winner)

Ronnie Scott's Big Band in a day May 2013

NCS - National Citizen Service 2015

Industrial Cadet level 1 Bronze March 2014

Ecole du Ski Français (**ESF**) - 3 STAR 2012 (French Ski School qualification)

References

Cambridge Quantum Computing | Engineer, Quantum Cryptography and Security - Line Manager Ben Merriman | Ben.merriman@cambridgequantum.com

LoveDigital Senior | Systems Developer - Line Manager Enock Kabungo | EnockLabungo@evidentsoftware.co.uk

Engineering Teacher | Wellinton College - Tutor John Carrington | Jexc@wellingtoncollege.org.uk

For further information please visit my website at **couldbejake.github.io**.