Callum McGregor

# Summary

I am a second year student at Exeter University, reading Computer Science. Most of my academic experience is in Java, with additional exposure to C, C++, Python, Visual Basic and Haskell. I also have industrial experience in web design and mobile application development using HTML, CSS and Javascript.

I have used Java extensively. Its versatility makes it ideal for university projects as well as being essential in industry. I have experience in using JUnit for test-driven development and have followed other Extreme Programming practices such as refactoring and pair programming. Most of my commercial experience is in Javascript, which despite its rough patches I find very enjoyable to use, particularly when augmented with jQuery.

I spent the summer of 2014 working for Harlequin Computing Solutions, creating rescyoume: a mobile application that puts cyclists in touch with each other when they are in need of help. I also helped write a Python prototype of Okey-Doke: an open source approvals testing framework for Java.

# Skills

## Java

I have used JUnit to write unit tests, mock objects and test suites. It was while contributing to Okey-Doke, an open source approvals testing framework that I first developed an interest in formal testing methods. I find that using JUnit with test-driven development makes for much better code in a process that I find very satisfying.

Recently I have studied more advanced parts of the Java language. One university assignment was to write a genetic mutation algorithm in a thread-safe manor. As well as teaching me how to use threads, it gave me an appreciation for the power of immutable code! I also studied Java design patterns, which solve a problem that I had already experienced.

## Javascript

I have used Javascript with JQuery commercially in client-side web development. Despite the confusing closures and its unusual prototype inheritance model I find Javascript very enjoyable to use.

## Mobile Application & Web Development

I have experience writing client-side code in Javascript, HTML and CSS; and server-side code in PHP. I worked on a mobile phone application, written as a client-side application and compiled into a cross-platform app using a technology called Cordova. I have used APIs to interact with technologies and applications on iOS and Android. I preferred developing for Android, as it was far easier to interact with the OS. In contrast, iOS would not allow prewritten SMS messages to be sent and I do not agree with their move to Apple Maps from Google Maps.

## Programming Paradigms

I am experienced in several programming methodologies. I have used Extreme Programming and Scrum agile development in both my studies and industrial experience. I like the clear structure and distinction of roles within a Scrum team, while XP practices have a larger impact on the quality of code. The team management of Scrum and programming guidelines of XP compliment each other and this is something that I am looking forward to using.

## Other Skills

Other languages and skills that I have experience in and would be happy to discuss are: Python, C, C++, C#, Objective-C, Functional Programming in Haskell, Prolog, Artificial Intelligence, Databases, SQL, System Architectures, Network Architectures and Protocols.

# Open Source

## Okey-Doke Python ([www.github.com/callummcgregor/okeydoke-p](http://www.github.com/callummcgregor/okeydoke-p))

A Python prototype for Okey-Doke: a Java approvals testing framework based upon JUnit rules ([www.github.com/dmcg/okey-doke](http://www.github.com/dmcg/okey-doke)).

# Education

## University of Exeter - Computer Science September 2013 – Present

I studied Computer Science and Mathematics in my first year at Exeter and received a First-equivalent grade and a Dean’s Commendation for my results. In my second year I decided to concentrate on Computer Science, which is where my real interest lies.

After covering the basics of Java I started to learn about the software development process and various programming paradigms, which I found insightful. I have studied C, the Linux OS on a Raspberry Pi and other areas such as artificial intelligence, system architectures, databases, and networks, with practical experience in each area. I learnt functional programming in Haskell, which I found required a change in mindset when approaching programming. I am keen to bring this way of thinking into how I write my code in other languages.

I am the Treasurer for the university’s Computer Science Society and am also on the committee for the Real Ale Society.

## Alton College September 2011 – June 2013

It was at Alton College that my interest in Computer Science was sparked. I learnt to program using Pascal, which as a strongly typed language with no exception handling, was a fun way to start programming and taught me to have an eye for detail from the start. In my second year I developed a central heating control system in Visual Basic using a waterfall development process. This approach to software engineering made it difficult to include forgotten system requirements and caused many propagating bugs. I achieved Computer Science, A; Mathematics, A; Further Mathematics, B.

# Experience

## Harlequin Computing Solutions June 2014 – September 2014

Skills used:

HTML, CSS, Javascript, jQuery, Git, Java, Extreme Programming, Test-Driven Development, Pair Programming, Cordova, iOS Development, Android Development, use of APIs.

I helped design and implement a mobile phone application called rescyoume ([www.rescyoume.com](http://www.rescyoume.com)) that puts stranded cyclists in touch with other nearby cyclists. I influenced the course of the project by researching and analysing the technologies that we would use. The client-side application was written in HTML, CSS and JavaScript, which I taught myself from books. In particular I used APIs to use a device’s map application and geo-location services to find a user’s current position and direct others to them. I enjoyed exercising Extreme Programming practices such as test-driven development and pair programming. We used Git as our version control system and I have used it since for all of my projects.

# References

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