Solly Varcoe

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Education

University of Bristol — 2017 - 2021

M.Eng. Mathematics and Computer Science — Predicted 1st

Second Year result: 74%
First Year result: 71%

- Gained valuable experience with programming languages from all paradigms, notably Java, Python, Haskell and C. I especially enjoyed functional programming (in Haskell) due to its mathematical approach which resulted in a high grade **(82%)**.
- Developed a formal understanding of essential mathematical concepts, both pure and applied, which were put into context in second year units such as Multivariable Calculus and Probability 2. These continue to be applied in third year units such as Cryptography A and Martingale Theory.
- The transferable skills and algorithmic thinking gained from this degree has allowed me to quickly pick up new languages and concepts. For example, during the summer of 2018 I developed a personal music visualiser as an exercise to learn JavaScript & HTML.
- Took part in multiple group programming projects in which I formed strong communication, management and development skills whilst learning industry standard practices e.g. Git/Github (version control) and Maven (dependency management). For example, I implemented both 'k-nearest neighbours' and 'naive Bayes' classification algorithms whilst discussing the benefits and drawbacks of each approach in a detailed report, earning **90%**.
- Strongly interested in artificial intelligence and machine learning after being introduced to it during a first-year pair programming module, in which my team developed an AI player for a game as an extension (resulting in a first-class mark). As a result, I have taken modules in this field in subsequent years and have taken relevant maths units (Multivariable Calculus and Probability 2) to deepen my knowledge of the underlying principles.
- Currently undertaking an individual project on 'The Mathematics of Communication', which combines information theory and probability through 'Low Density Parity Check' (LDPC) codes. This topic was chosen due to my enjoyment of Coding and Number Theory **(93%)** in second year, which introduced me to many fundamental concepts of information theory and cryptography, and it's natural overlap between both of my disciplines.

Third Year Modules:

Project: The Mathematics of Communication
Cryptography A; Machine Learning; Image Processing & Computer Vision; Information Theory 3; Martingale Theory
Advanced Algorithms; Computer Graphics; Computational Neuroscience; Algebra 2

Second Year Modules:

Language Engineering; Data Structures and Algorithms; Multivariable Calculus; Methods of Complex Functions; Probability 2; Symbols, Patterns and Signals; Coding and Number Theory; Theory of Computation

First Year Modules:

Functional Programming; Object Oriented Programming; Imperative Programming; Algorithms; Calculus 1; Linear Algebra 1; Probability 1; Analysis 1A; Foundations & Proof; Group Theory

Exeter College — 2015 - 2017

Graduated with the following A Levels:

Physics (A*) Mathematics (A*) Further Mathematics (A) Philosophy (AS Level) (B)

Chulmleigh Community College — 2010 - 2015

Graduated with 11 GCSES (A* - C) including:

Mathematics (A*) Science (A*) Computer Science (A) English Language (A) English Literature (A)

Work Experience & Projects

SCISYS UK Ltd — July 2019 - September 2019

Software Engineer (Internship)

- Engaged in full-stack development on a classified maritime framework for the 'Defence Science and Technology Laboratory' (DSTL), consisting of a complex codebase implementing cutting edge fuzzy-logic techniques to assist in the automation of naval procedure
- Contributed heavily to both the front-end and back-end of the project. JavaScript and the AngularJS framework was used alongside HTML and CSS to create a client side interface, whilst Java and PostgreSQL was used for server side development. An additional requirement of the project was that multiple frameworks should be able to communicate and assist each other, requiring the implementation of a publisher-subscriber model using DDS messages.
- Worked within an agile environment, gaining valuable experience with Jira (Issue tracking), Jenkins (Continuous integration), Git and Sourcetree (Version control). This was encapsulated in a scrum framework, with daily scrums and fortnightly sprint reviews, allowing me to not only get quick feedback on my work but also contribute ideas on a daily basis.
- Designed and implemented front-end automation tests from scratch within the selenium framework. As the project was fast moving and the HTML constantly changing, I implemented these tests using the 'Page Object Model' design pattern and rewrote all prior ones in this style. This allowed for tests that were easily maintainable as the testing logic was separated out from the structure of the web-page, enabling the team to test at the same pace as they developed.

University Game Jam — 2018

Programmer

- Collaborated with a group of 4 other students to create a espionage game within a 24-hour period.
- Prototyped and iterated on gameplay ideas using Unity & C♯, including features such as pathfinding for enemies and a lighting-based stealth system.
- Mocked both visual and musical assets, using GIMP and FL Studio respectively.

Technical Skills

LANGUAGES:	C	JAVA	JAVASCRIPT	HASKELL	PYTHON	HTML	LaTeX
MISC:	GIT	WINDOWS	JUNIT/MOCKITO	ECLIPSE	SELENIUM	LINUX	POSTGRESQL

Other

- Member of both the University of Bristol Tennis Club and Computer Science Society.
- Guitar player with a love of blues (received 'Platinum Award' for contributions to the music department at Chulmleigh).
- Appointed 'Senior Prefect' at secondary school, both leading and managing regular prefects.