DANIEL JAMES

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EDUCATION

University of Birmingham *October 2013 - July 2017*
BSc. Computer Science Classification: 2:2
Modules: Computational Vision, Computer Systems & Architecture, Mathematical Techniques for Computer Science, Natural Language Processing, Models of Computation, C/C++, Distributed and Parallel Computing, Human Computer Interaction, Intelligent Data Analysis, Networks, Operating Systems

King Edward VI Aston School
A Levels: ABBC (including A in Computing)
GCSEs: 9 A*-B (including English and Mathematics)

SKILLS

Working Knowledge: Javascript (ES6), HTML5, CSS3, Node.js, C#, Vue.js, Java, Git
Basic Knowledge: C, C++, OCaml, Haskell

UNIVERSITY PROJECTS

Tank Game A team-based university project written in **Java**

- Worked with a team to create a top-down video game with online multiplayer, using **Git** as a version control system.
- Designed the communication protocol which was used to transfer data across a network, using Google's Protobuf as a design base.
- Created most of the core game logic systems which powered gameplay, as well as a particle engine used to add graphical flair to the game.

yod Final year project - A **C#** library for language generation

- Wrote a library in C# which generates new languages from basic phonetic and grammar principles, using Natural Language Processing techniques.
- Uses an object-oriented approach, where each part of the language is defined in its own class.
- Also implemented a command-line front-end application for users to interact with the library in a more user-friendly way.
- Focus of my thesis was the innovative use of Natural Language Processing to invent new languages for creative uses, rather than parse and understand existing languages.

PROJECT EXPERIENCE

ztimer A Rubik's Cube solve timer written in **HTML5**, **CSS3**, **Javascript (ES6)** and **Node.js**.

- Uses the **Vue.js** front-end framework to display updating data in real-time.
- Uses Node.js to provide a REST API which gave random initial cube states, as well as run a server which serves up the site and assets to users.
- Designed using modern web technologies, including using **CSS grid** to layout elements on the site in a responsive way.

QCPU A **Node.js** emulator for a fictional CPU

- Devised a specification for a fictional 16-bit CPU, including different opcodes and multiple registers.
- Wrote an emulator for this CPU as a Node.js module, capable of executing binary files according to the specification.
- Created an assembler which converts from a specialised assembly language to binary files which can be executed.
- Made a web front-end using HTML5, loading the emulator using **ES6 modules**, which allows users to enter and execute their own code. Because the code is essentially converted to bytecode and executed on a virtual machine, executing user code this way is secure.

They Are In A Room A VR game, written in **Unity** and created for Ludum Dare 37

- Worked with a small team to create a virtual reality game in Unity within 48 hours for the Ludum Dare 37 game jam.
- Produced a working product within a strict deadline, with initially not much experience with Unity.
- Used **Git** as a version control so we could collaborate simultaneously without issues.
- Wrote an audio manager which handled voice lines being played when the player completed certain actions.

RELEVANT SKILLS

Bands and Ensembles

- I have been involved in multiple bands and ensembles, including playing bass guitar in the pit band for several theater performances at King Edward VI Aston School. Playing with other musicians in these groups required good teamwork and a degree of creativity. I also led an orchestra of younger students as a conductor and arranger, which required me to not only compose the pieces with regard to the skill levels of the students, but also work out the best way to teach them to play as a group. Additionally, I spent two weeks in a local primary school with 2 other A Level students, teaching primary school students to perform flute pieces in small ensembles, which required similar skills.

Desert of Vice

- I composed the music for the iOS and Android mystery-adventure game **Desert of Vice**, which was featured on the iOS App Store "Best New Games" section in January 2018. As well as writing the music for the game, I also created a set of sound effects and ambient loops. This project involved taking requests from a client and being given free reign to create music which matched the briefs. I also had to work to deadlines so that beta versions of the game could be released with music. At some points, the music needed to be changed to more closely fit the client's vision, and I was able to quickly make these changes to get the best result for the client.

Game jams

- I took part in several game jams, where the goal is to create a working game within a short timespan - often as little as 48 hours. These events put a focus on the strict deadline, as well as getting a minimum working product quickly. I collaborated with a team on some of these game jams, including the VR game mentioned above. Working with a team with such strict deadlines emphasizes good teamwork and communication. In addition to those skills, they also involved heavy use of version control (in our case, Git) to faciliate collaboration so that multiple developers could work on the code without breaking it for others.

My other interests include learning about language and linguistics, playing the piano, double bass and bass guitar, and solving Rubik's cubes.