

Michael Parkin-White

Curriculum Vitae

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Personal Statement

A First-class Computer-Science graduate from University of Bristol. My main areas of interest are in computer graphics, high performance computing and game development. I am an efficient problem solver and enthusiastic about learning new things. I am currently working on a commercial videogame project, Vitality, which is due for release in September 2018 on Steam. Through experimentation, learning and practical experience, I have developed a wide range of skills applicable to many areas of software development.

Education

2014-2017 **Degree**, *University of Bristol, Bristol, First Class Honours.*
Bachelors in Computer Science (BSc) - 77% Average

First Year Modules: *Programming and Algorithms I & II, Mathematical Methods, Group Theory, Formal Logic, Origins of Computer Science, Computer Architecture, Theory of Computation.*

Second Year Modules: *Software Product Engineering, Datastructures and Algorithms, Concurrent Computing, Human-Computer Interaction, Computational Neuroscience, Language Engineering, Signals Patterns and Symbols.*

Third Year Modules: *Games Project, Web Technologies, Computer Graphics, Character and Set Design, Image Processing and Computer Vision, High performance Computing, Advanced Algorithms, AI and Logic.*

2012-2014 **A-Level**, *King Edward VI School, Stratford-Upon-Avon.*
A*,A*, A, A - Computing, Maths, Further-Maths, Physics

Skills

Programming Languages

Imperative Programming Languages: C, C++, Java, C#

Scripting Languages: GML, Javascript, Python, PHP

Web and Databases: HTML, CSS, SQL

Platforms and Technologies

Graphics: HLSL, GLSL, GLSL ES (OpenGL 3.0+, DirectX 9.0c+)

HPC: OpenCL, MPI, OpenMP, VTune, ICC

Game Engine's: Unity, GameMaker:Studio, Custom C++, Custom Java

Web: NodeJS, MySQL/SQLite

Computer Vision: OpenCV, Bespoke solutions

Experience

Vocational

September **Student Laptop and Mobile Clinic**

2015- *University of Bristol IT Services – Part time*

June 2017

- Resolve software related issues on students' laptops and mobile phones
- Provide technical advice and support for students
- Computer maintenance – Software installation, Virus/software removal
- Supervision of other Clinic technicians
- Sole responsibility for full operation of the laptop clinic over the summer in 2016

Summer **Freelance Game Developer**

2014-2018

- Implementing Gameplay systems for clients
 - Designing data structures and algorithms for clients' games
 - Design and development of entire game project
 - Agile application development with frequent client interaction
 - Testing and debugging
 - Addition of network functionality to clients' project
 - Development of shader assets for GameMaker:Marketplace
- Long-term project: <http://www.girdthysself.com/>

Recent Personal Projects

2013- **Vitality** - Commercial Game Project – *Lead Programmer and Game Designer*

Vitality is an open-world sandbox RPG with a focus on player interactions, atmosphere, exploration, and technological advancements. Starting at the dawn of civilisation and advancing through to the industrial age, learning new skills and experiencing new situations as the game progresses.

This project has given me a great deal of experience with: Computer graphics, Games System design, Networking, Artificial Intelligence and Project Management.

This project has been my full-time occupation since June 2017 and the game is scheduled for release in September 2018 on Steam.

2014- **Graphics and Shader programming**

- Researching and implementing a variety of graphical effects utilising hardware acceleration.
- Solving practical application problems: simulating fluid dynamics, advanced lighting effects, efficient auto-tiling etc;
- Implemented modern 3D computer graphics techniques such as SSAO, SSR, POM, CSM and filtering, soft particles, decal projection;

2012- **Lead Programmer and Owner** - MantaGames

Am part of a team who, prior to Vitality, were developing freeware games and maintaining a website with 22,000 registered users. We distributed a number of our games for free under the MantaGames alias.

Additional Skills

Platforms and Technologies

- Computer Graphics** Experience with modern graphics APIs OpenGL/DirectX and proficiency with GLSL and HLSL. Experience implementing graphics pipeline's for indie video games, and utilising shaders to both enhance game visuals and performance.
- Game Engines** Expert knowledge and advanced experience with GameMaker:Studio (10 years). Experience working with Unity for small projects. Developed a custom game engine in C++ for University 3rd Year Project.
- High Performance Computing** Experience working with various architectures for high-performance software development using libraries such as OpenCL, MPI and OpenMP. Experience with general multi-threading and concurrent program design. I also enjoy researching techniques that help improve software efficiency such as data access, cache considerations and algorithmic optimisations.
- Web development** Experience working with NodeJS, PHP, HTML, CSS and JS (DOM). This includes both front end and back end development, including experience working with SQL and relational database design. I also have experience creating real-time server-client applications for dynamic web-pages, and for game-website APIs.
- Games Systems and Architecture** I have been developing games both as a hobby and as a part-time job for over ten years. During this time, I have gained extensive knowledge of how to structure a game, design gameplay systems both with regard to understanding the technical demands, and improving the gameplay experience for players. With a specific focus on efficiency, maintainability and scalability of an engine, whilst also ensuring that any technology used achieves its end-goal of enabling a fun and un-interrupted gameplay experience.
- Game Design** Experience planning and designing gameplay features, balancing difficulty and creating a rewarding gameplay experience for players. This includes the design of algorithms and equations that control a players progression in the game.
- Networking** Experience designing and implementing application-specific networking systems to allow efficient and robust client-server communication. This also includes the design and execution of scalable networking architectures to enable both a high volume of clients, and game server architectures that allow for straight-forward implementation of networking for instances within a game world, and automated load-balancing/packet optimisation. I also have experience with designing stable and secure server-side protocols which guarantee game integrity.
- 3D Modelling and Animation** Experience working with 3D model creation software such as Maya/Blender/3DSMax, including basic animation experience and texturing. While I am not an artist, I have a good insight into the 3D art and animation production pipeline and how computer graphics technology compliments and enables it. With knowledge of shading networks, geometry types (polygonal, nurbs, tessellated surfaces, etc), model format structure and practical experience utilising external software for lightmap baking and model processing. Also have experience discussing the format and requirements for special textures such as normal maps, specular/gloss maps, roughness etc; with a production artist.

References and Portfolio

Main Personal Project - Vitality

<https://gamejolt.com/games/vitality/171430/> - Public development log for Vitality.

<https://www.youtube.com/MantaGamesCo> - 'MantaGames' Youtube channel showcasing demo videos of Vitality and other projects.

<http://vitalityrpg.com/> - The website for my commercial videogame project Vitality.

Portfolio

<http://mich.pw/> - My personal portfolio containing some of my programming projects.

LinkedIn

<https://www.linkedin.com/in/michael-parkin-white-25318393/> - LinkedIn Profile page

Project: GPU-Accelerated, real-time software rasterizer

I designed and implemented a rasterizer from scratch using C++ and OpenCL for the Computer Graphics unit during my degree. (98% Grade - Highest mark ever achieved in the unit.)

Project Video: <https://www.youtube.com/watch?v=yXUcj-AIQ24>

I challenged myself to create a demo which would run in real-time (60 fps) on modern GPU hardware whilst also implementing modern rendering effects and graphical pipeline features such as Screen-Space-Ambient-Occlusion (SSAO), Screen-space-reflections (SSR), texture filtering, Depth-map directional shadows and a full material system. The end result was in-effect a custom graphics API and pipeline with support for resource loading and an ability to implement both vertex and fragment shaders through the use of OpenCL kernels paired with a collection of utility functions, created as part of the coursework.

An open-source release of this project can be found on: <https://github.com/MishMash95/Rasterizer>

Project: Interactive table-top tower defense game

For our 3rd year group project, we developed an interactive table-top tower defense game that featured physical towers that players could move around an arena, with the game-world projected down on top. This project utilised a wide range of different technologies, including a custom lightweight C++ game engine, an android phone app that players on the attackers team could use to connect in and spawn minions, a webcam and computer vision technology for real-time calculation and detection of the physical towers position, and a networking architecture tying all of the sub-systems together.

The project can be found on: <https://github.com/mikefitz888/ClusterDoom>