GEORGE CORNEY

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INTRODUCTION

Previous clients include Microsoft, LG, Atlantic Productions and the Met Office. My work both personal and contracted has reached millions of users and featured on sites like The Next Web, Gizmodo and FastCoDesign.

I specialize in web development and computer graphics, however, I'm never shy to grapple with a new domain to meet the demands of a project.

I'm a advocate of open source and you can find my contributions under the handle 'haxiomic'.

EXPERIENCE

Microsoft June 2016 - Present
WebGL, GLSL, Physically Based Rendering *Contracting*

- As part of a push for the 3D computing future, Microsoft are developing an internal physically based rendering engine (PBR) to be used in Paint3D and other Microsoft products (such as Remix3D).
- I was contracted to develop the WebGL version of the engine, which included implementing effects such as self-shadowing, bloom and glossy reflections.
- Device compatibility and performance are top priority in this project, so fallback techniques (such as float packing) were used to ensure a high quality PBR experience even on low-end devices.

Alchemy VR Feb 2016 - June 2016
VR, C++, three.js, WebGL, GLSL, node.js *Contracting*

- Alchemy VR are transitioning to distributing their VR films directly to users (rather then through exhibitions), I was contracted to develop the cross-platform Netflix-style video store to enable this.
- To provide a cross-platform base (where bundling a webview wasn't an option) I implemented the WebGL API over GLES using the V8 JavaScript engine (C++), this enabled us to reap the benefits of developing for the web (live feedback, easy distribution, easier to hire developers etc), whilst allowing access to native code and APIs where necessary.
- I was also responsible for developing the media delivery systems, which involved writing a content delivery server in node.js and developing an in-house DRM system.

Atlantic Productions Dec 2015 - Feb 2016
three.js, WebGL, GLSL, HTML, SCSS *Contracting*

- Contracted to develop interactive features for a companion website to Atlantic Productions recent series "David Attenbrough's Great Barrier Reef". Features included a WebGL globe displaying animated wind flow, atmospheric temperature and ocean current data

DinahMoe Nov 2015
WebGL, GLSL, three.js, Front-end Web *Contracting*

- Contracted by DinahMoe to develop portions of an interactive WebGL film, Canada Goose's "Out There". The project included developing a system to render WebGL output to video.

LG & Responsive Ads Sept 2015
WebGL, GLSL, Front-end Web *Contracting*

- As part of an LG OLED TV ad campaign, I was contracted to produce an interactive WebGL fluid and particle simulation in collaboration with responsiveads.
- The ad was required to run smoothly in all modern browsers, including mobiles and underpowered devices. The computationally intensive nature of the simulation required heavy optimization and an adaptive quality system.
- Traditionally this sort of simulation requires extensions to WebGL (such as floating point textures), to enable maximum compatibility, techniques were developed to pack simulation data into 4 byte textures which were available in every WebGL instance (whereas extensions are not).
- A early preview version of the ad is available.

Met Office June 2015
WebGL, GLSL *Consulting*

- The Met Office Informatics Lab were developing a browser-based 3D visualization of live weather in the UK. I was brought in to consult on techniques for high-performance volumetric rendering and approaches to resolve performance issues their initial WebGL ray marching implementation.

Alchemy VR June 2015, Sept 2015
Java, C++, Android, Mobile *Contracting*

- Alchemy VR is a recently formed branch of Atlantic Productions, their VR premier "David Attenborough's First Life" was to be shown on 80 Gear VRs in the Natural History Museum from the 12th of June (2015).
- Alchemy asked me to solve a number of critical problems two weeks before their premier deadline. I was tasked with developing a custom VR video player and bypassing the built-in Oculus Home without resorting to rooting the devices.
- The custom VR video player was developed using C++, Java Native Interface and Oculus's Mobile SDK and the bypass was developed with Java and the Android API.

fffunction Apr 2015
JavaScript, backbone.js, HTML, SCSS *Contracting*

- fffunciton is a digial design agency in the Southwest with clients that include Roland UK and the Bristol museums group (BMGA).
- I was brought in to contribute to a browser-based book reader and preview app (commissioned by Oxford University Press). The app was developed with backbone.js, node.js and Grunt.
- My role involved developing a page layout engine and viewer thumbnail alongside bug fixes.

Hive Nov 2013 - Jul 2014
Objective-C, OS X Reverse Engineering, UI & UX, JavaScript *Startup*

- Hive was a team collaboration app I worked on with a small group during university. It was an experiment in developing the ideal collaboration tool. The philosophy was that team cohesion could be improved by reducing boundaries between computers; the goal was to be able to push content (including running programs) from one device to a teammate's immediately and intuitively (in a similar manner to moving windows between multiple displays).
- The project won the Cisco Open Collaboration Challenge and was accelerated for 3 months at dotforge.
- My role in the project was development of 'State-sharing' (which involved reverse engineering OS X's state saving feature), UI & UX design, and the development of the native OS X app.
- I left the project after the release of OS X Yosemite which contained features (Continuity and Handoff) which competed with our core technology 'State-sharing'.

SELECTED OPEN SOURCE PROJECTS

WebGL Fluid September 2014
GLSL, Haxe, Lime, JavaScript, C++, WebGL

- This project is a GPU fluid and particle simulation written in Haxe and GLSL, targeting HTML5 for browsers and C++ for desktop and iOS. The simulation solves the Navier-Stokes equation for incompressible flow over a grid with the Jacobi method and uses the velocity field to advect over 1 million particles.
- The motivation for this project was to explore using WebGL for high performance physics simulations and to investigate the performance factors involved.
- It's been played with approximately **2 million times** by **1.6 million users**, achieving a total of **8 million** pageviews.
- It has reached the front page of Reddit (twice) and featured in articles on
  - FastCoDesign
  - The Next Web
  - Gizmodo
  - engadget

GLSL Parser in Haxe Mar 2015 - Present
GLSL, Haxe, JavaScript, C, Context Free Grammars, LALR *Work in Progress*

- The aim of this project is to provide a cross-platform GLSL parser (and parser generator) that supports the GLSL reference language grammar.
- The motivation for the development was to enable compile-time transformations (such as minification or transpilation) of GLSL source, as well as tighter integration with the host codebase when working with the Haxe compiler.
- The project can be accessed and tested on github github.com/haxiomic/haxe-glsl-parser.

EDUCATION

University of Sheffield
B.Sc in Physics with Astrophysics ◇ *First Class*

TECHNICAL STRENGTHS

Programming Languages	JavaScript, GLSL, C++, C, Objective-C, Haxe, Bash
Technologies & APIs	HMTL5, WebGL, Git
Platforms	Android, iOS, OS X, Linux
Skills	UI & UX design, Reverse Engineering

AWARDS

Best Developer, AMEE Medical Education Hackathon September 2015
WebGL, three.js, JavaScript, HTML, SCSS

Best Science App, Google Campus EdTech Weekend October 2012
Haxe, JavaScript, iOS