

Sean Connor

Architect Graphics/Software Engineer and Researcher

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Languages, Tools and Experience

Languages	Libraries	Software/Tools	Platform/OS	Hardware	Mathematics
C/C++	OpenGL	Unity3D Game Engine	Debian/Linux	Altera Cyclone	Trigonometry
C#/Mono	WebGL	Unreal Engine	Google Compute	Arduino	Algebra
Java	FFmpeg	Houdini	Google API	Raspberry Pi	Linear Algebra
Python	Stripe	Derivative Touchdesigner	Android	Hololens	Calculus
Node.js	OpenCV	Autodesk Maya	iOS	HTC Vive	Vector Calculus
Javascript	Max 7 Jitter	Houdini	Raspbian	GearVR	Statistics
MySQL	ZED SDK	Adobe Photoshop	Wordpress	ZED Camera	
Bash	Spout SDK	Adobe Media Encoder	Wix	Nvidia Shield	
Swift	Express.js	Adobe After Effects		Oculus Dk2	
VHDL	Mandrill	Altera Quartus Prime		Neopixels	
MEL Script	Vulkan	Git Version Control		Christie Projectors	
HTML5	AVPro Video	Systemd			
jQuery	UNET	Docker			
ReactiveX	TWGL	Lets Encrypt Certbot			
GLSL	FB360/TBE	Vim/Neovim			
CUDA		Icecast2/Ices2			
		Android SDK			
		Apple Xcode			
		Wireshark			
		MySQL Workbench			
		OnShape			
		Christi Twist			

R&A Architecture

Unreal Engine Engineer

Leveraging ARKit to build a AR Architectural Visualization App for iOS

May - June 2019 (1 Month)

Designed and developed augmented reality application using ARKit and iOS to pre-visualization architecture for the architectural design firm R&A.

Polypulse LLC

Graphics Researcher

Researching and Simulating Virtual Autostereoscopic Displays

November 2018 - Present

Autostereoscopic Display Research

Currently researching and writing simulations to test autostereoscopic displays under a range of conditions and configurations through rasterization/raytracing hybrid.

The Third Floor Inc

Unity Architect and Researcher (Staff)

Supervising and Leading AAA Augmented Reality Experience

2017-2019 (2 Years)

Supervisor and Leader

Directing a team of artists and developers to produce state of the art interactive software for the top companies in theme park ride construction.

Projection Systems

Implemented easy to use realtime projection mapping previsualization system that allows artists to synchronize a virtual projector to a ride vehicle and perspective project portals into virtual worlds.

Strict Naming Convention Specification

Directed and authored a naming convention specification designed to be tokenized and programmatically interpreted for automation across Maya and Unity. The parser that interpreted this naming convention is verbose and provided a debugging window to describe to artists why something is named incorrectly.

Custom Unity Asset Integration Pipeline

Implemented custom Asset(Postprocess/Preprocessors) for the automatic integration and configuration of FBXs, textures, materials, shaders, colliders and animations to reduce the artist workload.

Animation Pipeline

Implemented a robust animation pipeline to replace Unity's animation import settings allowing artists to configure mask, combiney curves, apply filters, apply constants, manipulate curves, and re-bind keyframes to Unity properties automatically on re-import.

Global Illumination Based Lighting Systems

Researched and directed the development of a custom lighting approach to replace Unity's lighting system with a more optimized and realistic lighting system.

Light Probe Specularity

Refactored Unity's built in PBR specular pipeline such that light probes would light AR objects with physically accurate specularity. This refactored allowed artists to continue authoring shaders from Amplify without worrying about breaking the shader pipeline.

Multi-Threaded Project Search

The purpose of this tool and API was to provide a way to rapidly search through a project (50GB of files) and find relevant files in milliseconds.

Quality Assurance Automation and Tools

Designed and directed the development of a suite of QA automation and tools allowing artists to perform a Maya export which is automatically sent to asset processing and bundling server which then automatically executes a QA runtime and imports the asset bundle into the runtime for visual and technical quality assurance.

Mousetrappe

Senior Unity Developer and Researcher (B2B)

AR and VR pre-visualizations for theme park experiences.

January 2015 - October 2017

VR Previsualization Refactor

I refactored Mousetrappe's VR pre-visualization system to be playable through a projector using an HTC Vive controller without the headset.

Multi-platform Build System

I developed a unique build system allowing developers to deliver 12 pre-visualization projects to 7 different platforms with a single click of a button. These platforms include **HTC Vive**, **Oculus Rift**, **Samsung GearVR**, **Google Daydream**, **Google iOS Daydream**, projection portal, and non-VR standalone.

Runtime Model Loading

I designed and developed a multi-threaded, multi-platform asynchronous tool that provides artists the ability to swap out 3D models without re-compiling/building or restarting the VR application.

Tower of Terror and Disney Castle Projection Mapping VR Previsualization

I continued improving and developing the VR previsualization system I had previously built, and implemented two new pre-visualizations of projection mapping experiences.

Ferrari Land Racing Legends and Flying Dreams VR Previsualization

I continued improving the VR previsualization system I had previously built and implemented a two new VR pre-visualizations:

- I designed and developed a pre-visualization of a stereo dome theater constructed by [Simworx](#) for Ferrari land experience in PortAventura, Spain. The application allows clients to view their stereo content from an audience's perspective.
- I designed and developed a VR previsualization of the [Ferrari Land Experience](#) in the Portaventura Barcelona theme park, the purpose of this project was to allow our clients to walk through the building's interior and visualize the experience before the theme park was constructed.

Projection Mapping Toolkit

I designed and developed a projection mapping toolkit using TouchDesigner. This toolkit allows artists to quickly setup and align projects and preview their content.

Star Wars Projection Mapping Show VR Previsualization

I performed improvements to the VR pre-visualization I had previously built, I also implemented a new pre-visualization of the Star Wars Projection Mapping show in Disney World.

VR Previsualization

I designed and built a virtual reality pre visualization tool using the Unity3D game engine. This previs tools allowed my clients to view their projection mapping show from the perspective of an audience member.

Whiskers Player

I designed and built a 4K video player for a projection installation in TouchDesigner. The output was split to two 4K projectors. This player allows artists to easily queue videos, align and color correct all in realtime.

Maya Spout

I wrote a Autodesk Maya C++ plugin that improved the productivity of our artists. This plugin captures Viewport 2.0 pixels and shares them using the [Spout framework](#). The pixels are then projected onto real world models. This allowed artists to quickly pose and align their characters directly through a projector without having to render.

Madrone Studios

CTO | Chief Technology Officer (Staff)

Directing All Technical Aspects of Madrone Studios

January - July 2017

[Hololens Augmented Reality Experience](#)

I designed and developed an augmented reality experience for [First Round Capital](#) for a unique event located at [The Village](#), this experience was developed in the Unity3D game engine.

MUSE app for [iOS](#) and [Android](#)

I designed and directed a team of developers to develop a cross platform app providing a event ticketing service, this service was dedicated to a special event series called [MUSE](#).

Recursion Cube

I directed the manufacturing of a 2ft³ box embedded with LED's with one way mirrors facing inward, the purpose of this project was to produce a recursive illusion decorated with Neopixels.

LED Text Scrollers

I designed and directed the manufacturing of 5 LED text scrollers each with 1,500 LEDs to be used at Google GDC party 2017.

Wireless Music System

Using cluster of 8 [Raspberry Pis](#), I implemented a wireless speaker system for Google GDC party 2017.

Installation

Using Derivative Touch Designer, I was contracted to design and develop the content pipeline for a projection mapping installation called [SF Public Canvas](#) in association with the [Bandaloop dance group](#) in San Francisco.

Eccovr

Senior Unity Developer (B2B)

Developing 360 Video Platform with Streaming Support

February 2016 - December 2017

I was contracted to design and develop a VR spherical video player integrated with the [Two Big Ears](#) spatial audio framework. The application was designed for [GearVR](#) and [Google Cardboard](#). The application is still in beta, but you can still download a preview for [iOS](#) and Google Play.

Beaudry Interactive

Researcher and OpenGL Developer (B2B)

Video Streaming Protocols

February 2016 - August 2016

Implemented Video Streaming Protocol

I was contracted to devise a method of streaming video from an Android tablet to [Max7](#) for an augmented reality application, the purpose was to offload heavy image processing onto a dedicated render server.

Zed Stereo Camera Integration into Spout C++ SDK

I was contracted to develop an OpenGL C++ application that interfaces between the [Zed stereo camera](#) and the [Spout framework](#). My application is capable of exporting color, anaglyph, depth, disparity and confidence maps.

Capture Interactive

Unity Developer (Staff)

Building Experiential Applications for Museums

September - December 2015

Android Multiplayer Application

I contributed to the development of a multiplayer android application. This application implemented UNET, Unity's new networking system. The primary objective was to connect over 24 Android devices to a server Android device.

PWSCC

Unity3D Game Engine Instructor (Staff)

December 2014

I designed and instructed a course at a local community college. Ten people enrolled in the course for a period of 3 weeks. During that time, I taught the basics of the Unity game engine, fundamentals of game design and the C# language.

Crucial App Concepts

Unity Developer (Contractor)

July - September 2014 (3 Months)

I was contracted to perform changes to several mobile games. These games were designed for the Android and IOS platform and developed in the Unity3D game engine. My tasks involved designing and building UI, embedding in-app purchases and implementing gameplay.

Silicon Beach Media

Unity Developer (Staff)

February - July 2014

During my time at SBM, I helped develop two mobile games and one released title named Ball Buster Blast. The games were written in C# and built in the Unity3D game engine. My tasks involved fixing bugs and implementing/optimizing UI.

Dr Rocket

Unity Developer (Solo)

2012 (1 year)

I developed my own game called [Dr Rocket](#) for the Android and IOS platform. It's a fast paced action physics game. You control a wacky professor with rocket boots attached to his feet. Your objective is to launch him as fast as possible into the stratosphere without colliding into any obstacles.

Academy of Interactive Entertainment Sydney

2 Year diploma in game art and design - 2012