

## Introduction

Principal engineer with strong drive to learn, take ownership, improve practices, and mentor.

Shipped real-time software (VR, embedded, graphics, games) for Microsoft, Valve, Disney, AT&T, and startups.

I continuously learn new skills, including machine learning and computer vision. In my free time I've written video games, a photo search engine, and a small operating system for my laptop.

Real-time software, embedded systems, operating systems, bare metal  
Computer vision, deep learning, machine learning  
Computer graphics, game engine internals  
C/C++, Python, PyTorch, OpenGL, OpenCV, RTOS, ARM, git

## Experience

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**Principal Software Engineer - VR Program Lead**  
**Synapse Product Development**

**Seattle, WA**  
**2015 - 2018**

Managed firmware development for VR devices, under contract to Valve and their partners.

- Promoted three times in three years: Senior -> Lead -> Principal
- Built and led a team of 4 firmware and QA engineers
- Developed code base shared across multiple VR products
- Worked closely with multi-national companies to customize firmware for their devices
- Owned or supervised: architecture, RTOS, drivers, hardware abstraction, firmware update, power management, QA, release management, manufacturing test
- (C, RTOS, ARM Cortex-M)

Prototyped 3D mapping and object detection using stereo cameras

- (C++, OpenCV, PyTorch)

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**Principal Software Engineer - Camera**  
**Exo Labs**

**Seattle, WA**  
**2013 - 2014**

Software engineer #2 at a video camera startup.

- Optimized founder's v1 firmware and iOS app for 10x improvement in frame rate and latency
- Owned firmware, video streaming, and computer vision research (C / Objective-C / OpenGL)

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**Senior Software Engineer - Graphics**  
**Walt Disney Company (contract)**

**Redmond, WA**  
**2011 - 2012**

Designed the rendering engine for Club Penguin – an iPad MMO game. (C++ / OpenGL)

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**Founder / Sole Proprietor**  
**Chinstrap Games**

**Seattle, WA**  
**2011**

Shipped an iPhone casual game using my custom game engine. (C++ / OpenGL)

**Software Development Engineer**  
**Microsoft**

**Redmond, WA**  
**2003 - 2010**

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Shipped five versions of Windows CE and Windows Mobile.

- Received rare Gold Star Award for individual excellence
- Wrote OpenGL code to greatly accelerate GUI and web browser on mobile devices
- Hardware bring-up, boot loaders, board support, drivers, cellular stack, debugger, USB
- Hired and supervised contractors and an intern

**Sabbatical**

**2002**

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Studied embedded software engineering at University of Washington. Researched operating systems and wrote a small operating system for my laptop. Backpacked across Europe.

**Embedded Software Engineer**  
**AT&T Wireless**

**Redmond, WA**  
**2000 - 2001**

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Wrote firmware and remote management software for cell towers. (C, Java)

## Personal Projects

- Photo search engine using convolutional neural net (Python, Flask, Docker)
- 3D mapping and object detection using front cameras on Vive Pro VR headset (C++, Python)
- First-person shooter video game using my own client / server game engine (C++, DirectX 9)
- Multi-threaded operating system for my laptop (x86 assembly language, C)

## Education

### Udacity

- Computer Vision Nanodegree

### Coursera

- Deep Learning Certificate

### University of Washington

- Machine Learning Certificate
- iOS Programming Certificate
- Game Development Certificate
- Embedded and Real-Time Systems Certificate

### University of Montana

- Four years towards B.Sc. in Computer Science (incomplete).