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EXPERIENCE

SpaceX

Senior Software Engineer

Redmond, WA
2018 – 2021

Starlink

- Worked on flight software running on Starlink satellites as well as ground systems.
- Squad lead of bus software team for half a year. In charge of planning, prioritization, and resolving issues across teams.
- Brought up new power, battery charging hardware, and new Ka RF systems running across microcontrollers and SoC's. Worked with multi-disciplinary hardware teams to quickly bring up hardware for validation and on-orbit testing.
- Implemented GNC (Guidance Navigation Control) algorithms on satellites with GNC team.
- Owner of the telemetry system for satellites. Implemented tools to budget and reduce our data rates as our system scaled up, and led the design for a new telemetry system to be more reliable and compact.

Microsoft

Senior Software Engineer

Redmond, WA
2015 – 2018

HoloLens / Windows Mixed Reality

- Worked on head tracking technology for HoloLens. Implemented infrastructure for ground truth testing. Performance optimizations for tracking code.
- Profiled and implemented optimized x86 SIMD code for core tracking algorithms. Resulted in top bottlenecks running multiple times faster, allowing us to ship mixed reality on low-power devices.
- Worked on first party application development for HoloLens. Benchmarked performance and implemented solutions to make sure experiences run in a smooth 60fps frame rate. Prototyped novel UX experiences for mixed reality.

Electronic Arts – Maxis

Software Engineer / Senior Software Engineer

Emeryville, CA
2007 – 2015

Unannounced Project

2014 – 2015

- Lead of graphics team composing of 5 graphics software engineers.
- Provides technical leadership for the core engine and graphics features, and served as point person for different core systems.
- Helped prioritized features and set goals for the team. Reviewed tech designs for graphics, gameplay, and tool features.

SimCity / SimCity: Cities of Tomorrow

2009 – 2013

- Worked on Mac/OpenGL port of the game. Performed OpenGL optimizations and ported our DirectX-specific command buffer multithreaded renderer to OpenGL which accounted for up to 30%-40% performance improvements.
- Implemented the graphics system for curved roads, a major feature in the new version of SimCity. Work involved a custom extrusion system for efficiently creating mesh based on curved cubic splines, and a data-driven component-based method of authoring roads allowing for quick iterations and managing multiple types of roads and different combinations of intersections from them.
- Worked on terrain flattening system which allowed roads and lots to dynamically flatten the terrain geometry underneath them to create a tight fit no matter how far the camera is zoomed in or out.

- Built the HTML/JavaScript UI system “SCRUI” used by the game. Worked on both the core library and the WYSISYG editor that allowed artists to easily create new UI layouts and behavior-driven key frame animations inside a browser.
- Integrated WebKit to be able to host the HTML/JS in game. Implemented efficient ways of bridging C++ and JavaScript, optimizing rendering and JavaScript performance, and reducing memory cost of managed code.

Spore / Spore: Galactic Adventures

2007 – 2009

- Implemented in-game pollination, allowing players to share and download content such as creatures, vehicles, buildings, and adventures with other players. Also worked on “Sporepedia”, a centralized in-game browser for content created and shared by other players.
- Improved UI performance by implementing image atlas pipeline.
- Implemented dynamic mesh generation for roads on a planet.

Electronic Arts

Software Engineer Intern

Redwood Shores, CA

06/2006 – 08/2006

- Implemented real-time displacement mapping on Xbox 360 for The Lord of the Rings: The White Council.

PERSONAL PROJECTS

MacVim

2018 – Current

- Maintainer of [MacVim](#), macOS version of the open source text editor Vim.
- Estimated 50,000 - 100,000 users.

TALKS

How to Implement AAA Game UI in HTML and JavaScript

2015

Game Developer Conference 2015

EDUCATION

Sc.B. in Mathematics-Computer Science

Brown University

2007

Providence, RI