Scott Johnson

Contact Information

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Summary

Highly accomplished Principal Graphics Engineer with over 15 years of experience specializing in designing, building, and optimizing performance-critical, real-time rendering systems for high-fidelity interactive experiences. Proven expert in low-level graphics architecture, driving extreme CPU/GPU optimization, and developing advanced 3D graphics and modeling algorithms. Passionate about crafting ground-breaking AAA quality animations that deliver impactful narrative and foster emotional connections, with a strong focus on C++ engineering, 3D math, and collaborative problem-solving.

Core Competencies

- **Animation & Narrative Realization**: Architecting and implementing AAA quality gameplay and AI animations, Seamless narrative integration into gameplay, Enhancing emotional impact through animation, Cinematic & Narrative Presentation tools & workflows, Maximizing character asset potential
- **Engine Development**: Real-Time Rendering Pipelines, GPU-Driven Rendering, Low-Level Graphics APIs (Vulkan, OpenGL, WebGL, DirectX), 3D Math & Graphics Algorithms (Bézier Curves/NURBS familiarity), Shepherding animation from DCC to final pixels
- **Languages & Core Skills:** C++14/17 (production quality), Rust, Python, GoLang, TypeScript, JavaScript/Node.js, GLSL (Familiarity with HLSL/PSSL), Strong Math Skills
- **System Design & Optimization**: Data Structures & Algorithms, Performance Optimization, Scalability, Owning features and systems, Analyzing technical tradeoffs
- **Leadership & Collaboration:** Technical Mentorship, Agile Methodologies, End-to-End Project Ownership, International & Distributed Team Collaboration, Breaking down features & building plans, Communicating technical details to diverse audiences, Leading by example, collaboration, and mentorship.

Work Experience

Remote

Capture Software Engineer at Chromatic **Mar 2023 - Present**

- Architected and developed distributed, fault-tolerant backend services within a large-scale Service-Oriented Architecture (SOA), applying principles of scalability and performance critical for real-time systems.
- Maintained and improved capture infrastructure using Docker, Heroku, and AWS, with RabbitMQ for queuing/message-passing.
- Applied browser and rendering expertise to improve image differencing algorithms, increasing accuracy and reliability.

Founder/CEO at FoamFactory **Jan 2021 - Mar 2023**

- Led the full-stack development and architectural design of a SaaS platform, demonstrating versatile backend engineering capabilities and foundational architectural design.
- Architected a scalable, high-availability microservice backend

leveraging **Rust**.

Principal Engineer at Medal **Dec 2019 - Jan 2021**

- Contributed to core architecture and performance enhancements for a large-scale gaming social platform, ensuring optimal user experience for millions of players.
- Engineered a secure, high-performance, hardware-accelerated video capture system, demonstrating expertise in low-level system optimization and direct impact on a large user base within the gaming community.
- Collaborated daily with cross-functional, **globally distributed engineering teams** to enhance software architecture and integrate third-party services, boosting system efficiency and performance.
- Mentored other engineers on the team, supporting the continuous improvement of the engineering organization.

Lead Graphics Engineer at InVision App **Dec 2016 - Dec 2019**

- Led the architecture and development of a high-performance, real-time rendering platform, demonstrating expertise in low-level GPU optimization and leading cross-functional teams in complex system design.
- Utilized **WebGL, haXe, and Typescript** for efficient GPU-based rendering of complex vector graphics.
- Designed and implemented a highly optimized, GPU-based rendering system for complex vector graphics, directly programming shaders in **GLSL** to achieve peak visual quality and frame rates, addressing demanding performance and memory constraints.
- Prototyped WebAssembly-based rendering engines, exploring **Rust and Skia** for future improvements.

Minneapolis, MN

Mobile Engineering Lead at When I Work **Sep 2014 - Dec 2016**

- Led team to innovate Android app solutions, enhancing user engagement and satisfaction.
- Led a team of 3 developers in an Agile environment, improving project delivery times and application quality through rigorous code reviews, CI/CD, and mentorship.

Edina, MN

Android Engineering Lead at Jingit **Nov 2013 - Sep 2014**

- Led cross-functional teams in developing an Android app for retail rewards, enhancing app features, as well as driving substantial engagement and user satisfaction.
- Boosted team productivity by 10% weekly through agile processes and coding standards.

Remote

Platform Engineer, Layout at Mozilla **Jun 2011 - Oct 2013**

- Engineered and maintained performance-critical, low-level rendering systems within the Gecko engine using **C++**, optimizing core components for a platform supporting hundreds of millions of users, directly addressing CPU/GPU efficiency and adherence to detailed technical specifications.
- Significantly optimized rendering pipelines for high-performance web-based gaming applications, leveraging **WebGL and DirectX**

to achieve extreme performance gains and cross-platform stability, demonstrating ability to 'wring the last drop of performance out of any CPU or GPU'.
- Architected and implemented core rendering systems compliant with W3C standards, focusing on stability, extensibility, and cross-platform performance.
- Developed complex **C++** rendering features, with an acute focus on low-level performance optimization and adherence to stringent technical specifications, contributing to a robust graphics architecture.
- Contributed to W3C specs such as CSSOM and **WebGL**, driving standards in web technologies.

Education

University of Minnesota

Master of Science, Computer Science **2006-2009**

From 2006-2009, was in a PhD program in Computer Science with research focuses in computational geometry and photorealistic rendering in computer graphics. Earned a Master of Science degree in 2009, graduated summa cum laude.

University of North Dakota

Bachelor of Science in Computer Science **2001-2006**

Completed a Bachelor's degree in Computer Science with focused study in software engineering and computer graphics. Graduated summa cum laude.

Bachelor of Science **2001-2006**

Completed a separate Bachelor's degree in Mathematics with focused study in statistical theory, number theory, and combinatorics. Graduated summa cum laude.

Awards and Recognitions

Top Secret Clearance (Currently Inactive); *United States Department of Defense*, 2009-2011

Google Summer of Code Mentor; *Crystal Space 3D SDK*, Summer 2008, Summer 2009

Google Summer of Code Grant Recipient; *Crystal Space 3D SDK*, Summer 2007

Inducted Lifetime Member, *Phi Beta Kappa*, Honor Society in Liberal Scholorship, 2006

Inducted Lifetime Member, *Upsilon Pi Epsilon*, Computer Science Honor Society, 2004

Skills

- **Languages**: C++14/17, Rust, Java, Python, Ruby, Go, Javascript/TypeScript
- **Graphics APIs**: OpenGL, WebGL, DirectX, Vulkan, CUDA, Shader Languages (GLSL, Familiar with HLSL/PSSL)
- **Game Engine Concepts**: Experience transferable to Unreal Engine concepts (e.g., state machines, blend spaces, animation graphs due to extensive graphics engine work)
- **Math**: Strong 3D Math Skills, Computational Geometry
- **Frameworks & Libraries**: Ruby on Rails, React, Node.js, WebSockets, Electron
- **Databases**: PostgreSQL, MySQL, Redis, Microsoft SQL Server, Hibernate
- **Cloud & DevOps**: RabbitMQ, AWS, Docker, Terraform, CircleCI,

Jenkins, Github Actions
- **Platforms & Systems**: Linux, Mac OS/X, Windows