Garrett Johnson

résumé
garrett.kjohnson@gmail.com
gkjohnson.github.io

Graphics engineer, web developer & designer with a passion for solving hard problems, making complicated systems beautiful, approachable, and performant, and working on software for robotics, data visualization, high performance rendering, and AR / VR applications.

education

University of California, Los Angeles
Class of 2012
BA Game Design and Development, Independent Major

tools & skills

Breaking down a problem	AR / VR technologies
Creative solutions	Computer graphics.
Quick learner	WebGL, three.js
Storyboarding, prototyping	GLSL, HLSL
User focused design	Unity3D, ShaderLab, C#
Adobe Photoshop, Illustrator	3D Modeling Concepts
Leadership	Data Visualization
Path tracing	React, Vite, React-three-fiber
Geospatial Rendering	HTML, CSS, Javascript

select awards

NASA JPL Voyager Award — NASA JPL 2022
Contribution to Lunar operations design

NASA Early Career Achievement Medal — NASA JPL 2022
Contributions to Mission Visualization

JPL Software of the Year — NASA JPL 2021
ProtoSpace

Innovation Foundry Voyager Award — NASA JPL 2018
Foundry IME

Best AR Experience — Unity Vision Summit 2017
ProtoSpace

Best VizSim Project — Unity Awards 2017
ProtoSpace

Best AR or MR Experience — Unity Awards 2017
OnSight

OnSight Product Development Team Award — NASA JPL 2016
OnSight

experience & projects

Owner, Software Engineer, Designer, Consultant at Halftone Ltd — 2025 - present
Based in Tokyo, Halftone Ltd maintains a suite of open source software tools & offers consulting services focusing on web applications, computer graphics, high-detail geometry rendering, CAD processing, geospatial rendering, robotic operations, & data visualization.

Software Engineer at Woven by Toyota — 2022 - 2025
Member of the User Experience Technology team exploring applications for immersive and web applications in service of user experience research and evaluation for technology development in Toyota's new futuristic city test course.

Interface Designer, Software Engineer, & Robotics Operations Systems Engineer at NASA Jet Propulsion Laboratory — 2012 - 2022
Responsible operations tools, system design tools, & forward-looking mission operations research for orbital spacecraft, lunar robotics, and Martian rovers & helicopter. Served as both a senior developer & designer on projects.

Web-based Mars 2020 V&V and Operations Tools
Pioneered the use of web based sequencing & visualization tools for M2020 Rover operations based in part on prototype work done for the ATHLETE robot in 2013. Project lead for autonomous drive introspection & mobility planning tools both used for V&V and mission ops as web & desktop based Javascript applications.

Hyperdrive & RSVP Tool Suite
Worked on long-running C++ tool used to operate nearly every terrestrial Mars mission. Implemented critical features and integrations for safely operating and planning flights for the Mars 2020 Helicopter, Ingenuity, and other quality-of-life features for rover operators. Developed THREE.js, desktop visualizations and tool for viewing, planning, and validating all drive sequences for the Mars Rover.

Foundry Integrated Modeling Environment
Observed live Team X processes & conducted user research with expert systems engineers in domains across the spacecraft design process from Team X. These subsystems involved propulsion, thermal, power, and more and were required to understand the purpose and workflow of collaborative system design and its pain points. Developed novel ideas for quickly integrating model-based systems engineering data and analyses and programmed prototype to communicate the idea and the concept to the team and customers.

ProtoSpace
Worked with assembly room technicians and CAD modelers to understand their work and problems therein to better address where ProtoSpace could improve their process using augmented reality and define a direction for the project. Developed specialized geometry download and rendering pipeline to enable rendering tens of millions of polygons with user interaction and dynamic, animated models in a web browser using three.js and Web Workers. Produced interaction tools and optimized rendering code for the Hololens application.