

Garrett Johnson

résumé

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[gkjohnson.github.io](https://github.com/gkjohnson)

Developer and designer with a passion for solving hard problems, making complicated systems approachable and performant, and working on software for robotics, 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	Meshlab
Quick Learner	React, Webpack
Storyboarding, sketching	HTML, CSS, Javascript
Prototyping	Computer Graphics
User Focused Design	WebGL, three.js
Adobe Photoshop, Illustrator	GLSL, HLSL
Github, Git	Unity3D, ShaderLab, C#
Leadership	3D Modeling Concepts
Pathtracing	Performance

experience & projects

Interface Designer and Software Engineer at NASA Jet Propulsion Laboratory

NASA JPL is responsible for some of the most ambitious unmanned space missions in history including earth orbiting satellites, many terrestrial Mars spacecraft, and missions beyond our solar system. While at JPL I've worked on mission tools, system design tools, and forward-looking mission operations research serving as both a senior developer and designer on projects.

Web-based Mars 2020 V&V and Operations Tools

2018

Pioneered the use of web based sequencing & visualization tools for M2020 Rover operations based in part on prototype work done for ATHLETE in 2013. Project lead for autonomous drive introspection and mobility planning tools both used for V&V and mission ops as web and desktop based Javascript applications. Developed web visualizations for sequencing preview for Rover and ACA / SHA operations.

Hyperdrive & RSVP Tool Suite

2018

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

2014-2018

Observed live Team X processes and 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

2015-2018

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 AR 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.

select awards

NASA Early Career Achievement Medal

Contributions Mission Visualization

NASA JPL 2022

JPL Software of the Year

ProtoSpace

NASA JPL 2021

Innovation Foundry Voyager Award

Foundry IME

NASA JPL 2018

Best AR Experience

ProtoSpace

Unity Vision Summit 2017

Best VizSim Project

ProtoSpace

Unity Awards 2017

Best AR or MR Experience

OnSight

Unity Awards 2017

OnSight Product Development Team Award

OnSight

NASA JPL 2016

personal interests

Cooking & Markets

Open Source Projects

Museums & Galleries

Computer Graphics

Traveling

Gaming