Brad Guesman Physics. Graphics. Music. Code.

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Education

Brown University   **Providence, RI. Expected Graduation Jun 2020.**
- **Degrees.** A.B. Computer Science, A.B. Physics. Cumulative GPA: 4.0/4.0.
- **Relevant Coursework.** Advanced Computer Graphics, Computer Systems, Deep Learning, Computer Vision for Graphics and Interaction, Design and Analysis of Algorithms, Honors Linear Algebra, Abstract Algebra, Quantum Mechanics, General Relativity.

Tech and Engineering Experience

Brown Visual Computing, Researcher   **Providence, RI. Jan 2019-Present.**
- Researches procedural content generation at the intersection of computer graphics and machine learning.
- Currently developing novel system for geometry and SVBRDF estimation from multiple images via differentiable rendering.
- Works with two masters students, advised by two professors (James Tompkin and Daniel Ritchie).

Raven Software, Activision, Audio and Graphics Software Development Intern   **Madison, WI. Jun-Aug 2019.**
- Reworked core features of the COD: Modern Warfare engine, at the intersection of geometry processing and sound transport.
- Collaborated with a cross-disciplinary team of artists, engineers, and designers.
- Created an original algorithm to solve a problem in an active area of sound transport research, within the strict performance requirements of a AAA first-person shooter.
- Reported to the director of engineering for the entire studio.

Spansive, Software/Firmware Engineering Intern   **San Bruno, CA. Jun-Aug 2018.**
- Architected connectivity stack for the Spansive Source wireless charger.
- Constructed backend pub/sub service to receive telemetry data and push updates using Google Cloud IoT core.
- Developed virtual WiFi debug console for the charger using node.js.

OurJamz Inc., Software Engineering Intern   **San Jose, CA. Jun-Aug 2017.**
- Designed cross-machine server-side audio engine for cloud based audio workstation in Golang.
- Developed wrapper for interfacing with pre-compiled C++ audio plugins using the C-Go library.
- Utilized Atlassian development tools and build automation in agile development environment.

Art and Design Experience

Brown STEAM, Co-President ('18/19) and Member ('17/18 and present).   **Providence, RI. Jan 2017-Present.**
- Leads students and faculty to plan/execute/promote multimedia projects and experiential workshops on interdisciplinary thinking.
- Organizes weekly club meetings, monthly one-on-one check-ins, and frequent syncups with different subteams.

SN0WCRASH, Independent Artist   **Los Altos, CA and Providence, RI. Jan 2016-Present.**
- Wrote, engineered, recorded and produced two EPs, released on self-founded indie label.
- Developed all aspects of marketing mix: album art and branding strategy, website, distribution plan, and promotional campaigns.
- San Francisco winner of KFOG's "Next2Rock" competition for undiscovered talent, from 500 independent artists.
- 700,000 plays and counting on Soundcloud, Spotify, and Apple Music. www.snowcrashmusic.com

Teaching Experience

Brown CS Department, TA: Intro to CS ('17) and Computer Graphics ('19)   **Providence, RI. Sept-Dec 2017, Jun 2019-Present.**
- Intro to CS: Educated students on algorithms, analysis, and data structures in the Racket and OCaml languages.
- Graphics: Helps students master key graphics concepts including illumination, viewing, and image processing.

Projects

Projects and portfolio work are an important part of any creative professional's resume. Here's a sampling of some things I've worked on. Visit my website, bguesman.github.io, for detailed info on all of my portfolio work.
- **Virtual Sky.** Physically-based simulation of cumuliform clouds using computational fluid dynamics.
- **Digital Arboretum.** Procedural generation of tree geometry, using Lindenmayer systems. Link to video.
- **Black Hole Ray Tracing.** A classic computer graphics algorithm, reimagined in curved spacetime.
- **MusicFind.** Better music exploration, on the web with d3.js.
- **The Replicant Delay.** Stereo analogue delay simulation, in the AU, VST2/3, and AAX plugin formats.

Skills and Interests

Programming Languages	Golang, Java, C/C++, Python, Scala, OCaml, HTML/CSS, JavaScript, GLSL, HLSL
Technologies	OpenGL, NVIDIA Falcor, DX12/DXR, Google Cloud, Qt, .NET, d3.js, p5.js, Git, SVN, Perforce, Eigen Sparse Solvers, MongoDB, JQuery, VST2/3, AU, PS4 Dev Tools, Tensorflow, Pytorch, Redner.
Computer Programs	Unity, Blender, Logic Pro X, Photoshop, Max/MSP, Premiere Pro.
Things I Like That Aren't Work	Bouldering, Playing With Vintage Guitar Effects, Sci-Fi, Bread-Making.