

# Brad Guesman

Physics. Graphics. Music. Code.

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## Education

### Brown University

Providence, RI. Expected Graduation 2020.

- **Degrees.** A.B. Computer Science, A.B. Physics. Cumulative GPA: 4.0/4.0.
- **Relevant Coursework.** Advanced Computer Graphics, Computer Systems, Machine Learning, Design and Analysis of Algorithms, Honors Linear Algebra, Abstract Algebra, Quantum Mechanics, General Relativity, Advanced Classical Mechanics.

## Tech and Engineering Experience

### 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.
- Rehabilitated club image on campus through massive rebranding effort and restructuring. Resulted in increased club membership and workshop/project frequency.
- Organizes weekly club meetings, monthly one-on-one check-ins, and frequent syncups with different subteams.

### SNOWCRASH, 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.
- 600,000 plays and counting on Soundcloud, Spotify, and Apple Music. [www.snowcrashmusic.com](http://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.
- Holds weekly hours and labs clarifying and communicating course material to students.

## 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](http://bguesman.github.io), for detailed info on all of my portfolio work.

- **Virtual Sky.** Physically-based simulation of cumuliiform 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, reimaged 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, C#

### 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.

### Computer Programs

Unity, Blender, Logic Pro X, Photoshop, Max/MSP, Premiere Pro.

### Things I Like That Aren't Work

Bouldering, Playing With Old Guitar Effects, Sci-Fi, Bread-Making.