Jacob Sundstrom

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EDUCATION

UNIVERSITY OF CALIFORNIA, SAN DIEGO
PhD in Music
Concentration in Computer Music and Digital Signal Processing
Expected June 2021 | San Diego, California
Cum. GPA: 3.95

UNIVERSITY OF WASHINGTON, SEATTLE
MM in Music Composition
December 2015 | Seattle, Washington
Cum. GPA: 3.7

UNIVERSITY OF CALIFORNIA, SAN DIEGO
BA in Music Composition, minor in Philosophy
June 2012 | San Diego, California
Cum. GPA: 3.83
Honors with High Distinction

LINKS

Github:// **woolgathering**
LinkedIn:// **jacobsundstrom**

SKILLS

DEVELOPMENT
SuperCollider • Python • MATLAB/Octave • C/C++ • LaTeX
SCM
Git
TARGETS
Linux • OSX • Windows

SELECTED AWARDS

Qualcomm Institute's Initiative for Digital Exploration of Arts and Sciences Artistic Residency, 2018 • Alcor Endowed Scholarship, 2015 • Stewart Prize, 2012 • Eagle Scout, 2006

RESEARCH INTERESTS

Real-time DSP • Data Sonification • Algorithm Development • Machine Learning • Sound Spatialization • EEG Signal Processing • Psychoacoustics

RELEVANT EXPERIENCE

UCSD | Graduate Researcher
September 2016 - present | San Diego, California

- DSP and compositional research with Pulitzer Prize winning composer Roger Reynolds.
- Developing robust real-time signal processing techniques for new works by Reynolds and serve in a performative capacity for said works.
- Designing cutting-edge spatialization strategies for work in a variety of contexts using VBAP, Ambisonics, and other spatialization techniques.

SOFTWARE DEVELOPER | Freelance
August 2016 - present | San Diego, California

- **Roger Reynolds**: Redesign of *Four Real-Time Algorithms*; digital signal processing optimization, redevelopment of FFT transformations of sound, code refactoring, redesign of UX, redesign real-time spatialization processing. Used in world-class performance contexts. Redesign of live processing and spatialization in *Watershed*.
- **Alvin Lucier**: Redesign of digital signal processing and spatialization for *Slices*.

UW | Graduate Researcher
March 2015 - June 2015 | Seattle, Washington

- Researcher in the Art + Brain Lab in The Center for Digital Arts and Experimental Media analyzing EEG signals in real and non-real time for use in artwork and research.

SEESCAN, INC. | Sound Design Engineer
July 2012 - September 2013 | San Diego, California

- Led research and development of audio displays for use in underground utility locating devices using principles of sonification, audio synthesis, and psychoacoustics.
- Research and development in conjunction with design engineers to develop acoustic chambers for use with piezoelectric film speakers in a new generation of Ridgid SeeScan SR series locators. Additionally aided in the development of amplifiers for piezoelectric film speakers.
- Audio interface on Ridgid SeeSnake devices.

OPEN SOURCE CONTRIBUTIONS

BOIDS | Author (SuperCollider)

- Implementation of Craig Reynolds' Boids flocking algorithm for SuperCollider. 2- and 3-dimensional speed-optimized versions in addition to a generalized N-dimensional version.

DBAP | Author (C++)

- Implementation and improvement of distance-based amplitude panning algorithm for sound spatialization.

SUPERCOLLIDER EXTENSIONS | Author (SuperCollider)

- Classes, methods, and class extensions for SuperCollider including offline FFT processing, spatialization processes, etc.

SUPERCOLLIDER FOR ATOM | Contributor (Coffeescript)

- Commands and grammar fixes to enable broader use of the package.

THEMES FOR ATOM | Contributor

- Customizations of Atom One Light and Atom One Dark to properly highlight SuperCollider syntax.