

# Paul Hembree, PhD

music &amp; interactive media

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## PROFESSIONAL EXPERIENCE

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- 2020    **Lead Asset Developer – Amper Music** – Artificial Intelligence Composition (Jan. 2020 – Present)  
Start-up offering a web-based AI composition tool that generates production-ready audio files based on duration, mood and genre input. Clients include Mastercard, Universal Music Group, Tencent, LG, NPR, and Reuters. Principal software developer in the Creative department, focusing on creating internal tools in Lua that generate scripts responsible for musical decision making, and as such, works closely with the Engineering department. Uses composition expertise to curate harmonic and rhythmic data assets for the artificial intelligence composer.
- 2019    **Asset Developer – Amper Music** (Aug. 2018 – Jan. 2020)  
Software developer in the Creative department, focusing on Lua scripts responsible for musical decision making. Created a proof-of-concept in Wwise showing applicability of Amper-generated music to adaptive audio in video games. Continued to curate musical data assets.
- 2018    **Asset Creator – Amper Music** (May 2018 – Aug. 2018)  
Used composition expertise to curate harmonic and rhythmic data assets for the artificial intelligence composer. Assisted with developing software in the Creative department.
- 2018    **Audio Technical Director & Sound Designer** – Freelance for Roger Reynolds and collaborators (2015-2018)  
Software development, sound design, audio recording, mixing, mastering and electronic music performance for Pulitzer prize-winning composer Roger Reynolds. Venues and presenters include the Park Avenue Armory, the Phillips Collection, and the Darmstadt New Music Summer Course, with collaborators including the JACK quartet and violinist Irvine Arditti. Funding provided by various music presenters and ensembles.
- 2018    **Part-Time Visiting Assistant Professor – Bard College Music Department** (2017-2018)  
Designed and taught courses on audio and interactive media with MAX/MSP/Jitter and Unity.
- 2018    **Lecturer – Skidmore College** (2017-2018)  
Designed and taught courses on game and VR development with Unity for the John. B. Moore Documentary Film Studies Collaborative, a video games culture survey course for Media and Film Studies, and supervised senior projects in digital media for the Art Department.
- 2015    **Computer Music Research Assistant – University of California, San Diego** (2011-2015)  
Software development, sound design, and audio production work with composer Roger Reynolds. Venues and presenters include the National Gallery of Art, Harvard and Columbia universities, with collaborators including Mark Dresser and Alarm Will Sound. Funding primarily provided by the University of California.
- 2015    **Instructor – University of California, San Diego** (2013-2015)  
Designed and taught courses on video game music history and culture, sixteenth century counterpoint, and undergraduate composition and orchestration.

## EDUCATION

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- 2015    Ph.D. in Music Composition, supported by Computer Music – University of California, San Diego
- 2009    M.Mus. in Composition, with an Emphasis in Technology – University of Colorado at Boulder College of Music
- 2005    B.Mus. in Composition, *magna cum laude* – University of Oregon School of Music

## TECHNICAL EXPERIENCE

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**Programming Languages:** Python, C#, Lua, Javascript, C    **Version Control & Issue Tracking:** git/Bitbucket, Jira  
**Tools & Frameworks:**

Audio: MAX/MSP/Jitter, SuperCollider, Pure Data, Kyma, ProTools, Reaper, Ableton Live, Reason, Logic

Game audio & development: Unity/C#, Wwise, Tone.js

Photogrammetry & 3D audio: Google Resonance, Reaper Ambisonics Toolkit, Visual SFM, Meshlab, Blender

Video: Adobe Creative Suite, Final Cut

**RECENT MAJOR PROJECTS**

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***Rite of Tephra* (2017-20)                      video game (Unity / C#)                      software**

- By Platypus Games, a collaboration with William Hembree  
 Contributed procedural terrain generation programming, original score and interactive audio programming  
 Available for download on Itch.io: <https://platypusgames.itch.io/rite-of-tephra>  
 2019      Procedural music system presented at Game Sound Conference, Millennium Biltmore Hotel, Los Angeles, CA (Oct. 29)

***Shifting/Drifting* (2015)                      violin, live audio media (Pure Data)                      23 min.**

- Collaboration with Roger Reynolds, composer, and violinist Irvine Arditti  
 Contributed interactive audio programming, performance & sound design.  
 2018      June in Buffalo Festival and Conference – SUNY: Univ. at Buffalo (June 7)  
 2016      Darmstadt International Summer Course for New Music – Orangerie – Darmstadt, Germany (Aug. 4)  
 2015      CCRMA Concerts – Stanford Univ., Palo Alto, CA (Oct. 5)  
 2015      Wild Beast, CalArts, Valencia, CA (Sept. 30)  
 2015      Art Power: Innovation Series – Conrad Prebys Experimental Theater, UCSD (Sept. 25)

***FLiGHT* (2013-16)                      string quartet, audiovisual media (Pure Data)                      70 min.**

- Collaboration with Roger Reynolds, composer, the JACK Quartet, video artist Ross Karre  
 Contributed interactive audio programming, performance & sound design.  
 2017      West Coast Premiere: UCSD Conrad Prebys Music Center (Nov. 30)  
 2016      Premiere: The Park Avenue Armory – New York City (Oct. 31)  
 2016      Preview: Univ. of Colorado at Boulder – ATL&S Black Box Theater (Oct. 3-10)  
 2016      Preview: UCSD Conrad Prebys Music Center (Aug. 25 – Sept. 3)  
 2016      Preview: The Philips Collection – Washington, DC (May 22)  
 2015      Preview: American Music Festival – National Gallery of Art, Washington, DC (Mar. 8)  
 2015      Preview: James Madison Univ. Contemporary Music Festival – Harrisonburg, VA (Feb. 19)

***Audiovisual Alchemy* (2016-17) live audiovisual media/virtual reality (Unity/C#/Pure Data) software**

- 2017      Sam Wells and Paul Hembree – Dept. of Electronic Music – Bard College, NY (Nov. 16)  
 2017      Mise-En Place Bushwick Open Studios – Brooklyn, NY (Sept. 23)  
 2016      Preview: Game Sound Con – Millennium Biltmore Hotel – Los Angeles, CA (Sep. 27-28)

***Goodnight Traffic City* (2017)                      video game (Javascript / Tone.js)                      software**

- Collaboration with Loren Schmidt, game developer & Kia Labeija, artist  
 Contributed original score, sound design and audio programming.  
 2017      Arcade/Gallery: Day of the Devs, The Midway, San Fransisco, CA (Nov. 11)  
 2017      Arcade/Gallery: Game Developer's Conference, Moscone Convention Center – San Fransisco, CA (Feb. 27 – Mar. 3)  
 2016      Arcade/Gallery: La Mama Galleria (Visual AIDS Everyday Project) – New York, NY (Nov. 17 – Dec. 10)

***Cerebral Hyphomycosis* (2016)                      cello, live audiovisual media (MAX/Jitter)                      7 min.**

- 2017      DUCKRUBBER – The Waverly Project – New York Univ. (Mar. 31)  
 2017      DUCKRUBBER – Stony Brook Univ., NY (Mar. 29)  
 2017      DUCKRUBBER – Dept. of Electronic Music – Bard College, NY (Mar. 27)  
 2017      DUCKRUBBER – Univ. Mass Lowell, (Mar. 23)  
 2017      DUCKRUBBER – Hosted by David Forrest – The Factory, Cambridge, MA (Mar. 22)

- 2016 Tyler J. Borden & Paul Hembree – Darmstadt International Summer Course for New Music, Germany (Aug. 5)  
 2016 Tyler J. Borden DMA Recital – Conrad Prebys Experimental Theater, UCSD (Apr. 6)

***Apocryphal Chrysopoeia* (2015)                      live audiovisual media (MAX/Jitter)                      10 min.**

- 2017 Neue Forum 5: Sam Wells, trumpet & Paul Hembree, computer musician – ShapeShifter Lab, Brooklyn, NY (Feb. 13)  
 2016 New York City Electroacoustic Music Festival – National Sawdust (June 5)  
 2016 The Callithumpian Consort – Jordan Hall, New England Conservatory, Boston, MA (Feb. 18)  
 2015 Qualcomm Institute IDEAS: Initiative for Digital Exploration of Arts and Sciences, VROOM, UCSD (June 29)  
 2015 NIME: New Interfaces for Musical Expression Conference, Louisiana State Univ., Baton Rouge, LA (May 31)  
 2015 SEAMUS: Society for Electro-Acoustic Music in the U.S. Conference, Virginia Tech., Blacksburg, VA (Mar. 26)  
 2015 N\_SEME: National Student Electronic Music Event, Bowling Green State Univ., OH (Mar. 6)

***Ikarus-Azur* (2013)                                      SATB chorus and large orchestra                                      15 min.**

- 2013 La Jolla Symphony & Chorus (Thomas Nee Commission) – Mandeville Auditorium, UCSD (Dec. 7-8)

***Lumière: Glacée et Réfractée* (2012)                      chamber orchestra                                      8 min.**

- 2012 Acanthes Academy @ IRCAM: ManiFeste “Rendezvous for Emerging Creation”  
 Ensemble Intercontemporain – Le Centquatre, Paris, France (June 28)

***Nosferatu* (2011/1922)                                      live film score (quartet, fixed audio media)                                      84 min.**

- Film score to F.W. Murnau's film, commissioned by UCSD German Studies Program  
 2011 San Diego New Music Collective – Mandeville Auditorium, UCSD (Oct. 21)

**RECORDINGS & PUBLICATIONS**

- 2019 *Aspiration* (Double CD Set) – Music by Roger Reynolds, performed by Irvine Arditti, Paul Hembree, inauthentica, and Mark Menzies. Kairos 0015051KAI.  
 2018 *Sixfold Symmetry: Pattern in Art and Science*. Edited by Roe-Dale, Rachel, and Rachel Seligman. Features procedurally generated art by students in my course Video Games: History Culture & Design (Spring 2017)  
 2016 “Audiovisual Alchemy.” In *Proceedings of the first research track of GameSoundCon: The Art, Technology and Business of Game Audio*, Sept. 27-28, Millennium Biltmore Hotel, Los Angeles, CA: 9-16.  
<http://www.gamesoundcon.com/2016-game-audio-research>  
 2015 *Ouroboros and Apocryphal Chrysopoeia: Aesthetics and Techniques* (Dissertation) U.C. San Diego  
 2015 *Four Real-Time Algorithms*. With Roger Reynolds and Jaime E. Oliver La Rosa. Published by Edition Peters.  
 2013 “A Spatial Interpretation of Edgard Varèse’s *Ionisation* using Binaural Audio”. *Perspectives of New Music*, vol. 51, no. 1 (2013): 256-261. With Dustin Donahue, percussion  
 2011 *Sound Check No. 5* (CD) Released by U.C. San Diego. Music Department, featuring *Passion* (2009)

**SELECTED EVENTS AS SPEAKER**

- 2020 “Audible Geometry” – Guest Lecture for Composition Seminar, Prof. Fernanda Navarro, Arizona St. Univ. (Nov. 9)  
 2019 “Audible Geometry” – Guest Lecture for Algorithmic Composition, Prof. Michelle Lou, UC Santa Cruz (Nov. 13)  
 2019 “Audible Geometry” – Game Sound Conference, Millennium Biltmore Hotel, Los Angeles, CA (Oct. 29)  
 2019 About Amper Music – ICMC: International Computer Music Conference – New York University (June 16)  
 2019 About Amper Music – SEAMUS: Society for Electro-Acoustic Music in the U.S. – Berklee College of Music (Mar. 21)  
 2017 “Audiovisual Alchemy: A Synesthetic Experience in Virtual Reality” – Skidmore Encore Series Lectures (Nov. 7 & 9)  
 2016 “Audiovisual Alchemy” – Game Sound Conference, Millennium Biltmore Hotel, Los Angeles, CA (Sept. 28)