

NOLAN LEM

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EDUCATION

Stanford University

Ph.D. Computer-Based Music Theory and Acoustics 2020 (expected)
Center for Computer Research in Music and Acoustics (CCRMA)

Columbia University

Master of Fine Arts (MFA) 2015
Sound Arts Computer Music Center (CMC)

University of Kansas

Bachelors of Science in Electrical Engineering (BSEE) 2013

University of Miami (FL)

Bachelors of Music (BM) 2008
Studio Music and Jazz Saxophone

TEACHING EXPERIENCE

Stanford University CCRMA

Fundamentals of Computer Generated Sound 2017 (fall)

Assisted students in basic digital signal processing for sound synthesis, multi-channel spatialization, and physical modelling and helped students carry out individual projects in computer-generated sound. Programming included ChuCK, javascript, and Web Audio API.

Neuroplasticity in Musical Gaming 2017 (spring)

Co-taught course in Virtual, Augmented, and Mixed Reality paradigms for design and programming. This course examined how psychoacoustics, cognition, and neuroscience of sound affects our experience of computer-mediated spaces. Assisted students in carrying out game-based projects in a variety of programming languages using Oculus Rifts, Vives, and consumer based EEG hardware. Programming included Unity (C#), javascript, and Processing environments.

Psychophysics and Music Cognition 2016 (winter)

Co-taught course in perception, psychoacoustics, cognition, and neuroscience of music.

Physical Interaction Design for Music 2016 (fall)

Co-taught course in physical computing in sound-related applications. Assisted students developing and implementing sensor and hardware-based designs for their individual projects which included work with arduinos, max/msp, and Processing.

Columbia University Computer Music Center

Teaching Assistant, Sound: Physics and Perception 2014
 Co-taught course content related to psychoacoustics, wave propagation, biological sound, physiology of hearing, and electronic sound production. Designed and carried out experiments demonstrating sonic principles.

RELATED EXPERIENCE

Seismic Sound Lab Geophysics and Seismology: Lamont-Doherty Earth Observatory
Sound Researcher 2014 Present
 Developed computer programs to sonify and visualize seismological data in multichannel applications. Created open-source Python Library to acquire, render, and sonify earthquake data.

Technical Assistant

Technical Assistant to Jean-Baptiste Barrière 2014
 Worked with Jean-Baptiste Barrière on his installation, *Jardin des songe* and the Miller Theater Composer Portrait concert.

Center for the Remote Sensing of Ice Sheets (CReSIS) EECS Department
Researcher 2011 2012
 Developed programmatic model for rendering climate and glaciological data into sound and image. Programming in C++ with audio synthesis in Max/MSP.

Viacom

Audio Intern: News and Documentaries 2007
 Developed web application for distributing song playlists to viewers. Edited music that was selected for News and Documentary programs for MTV.

GRANTS AWARDS COMMISSIONS

2018 Sennheiser Store, Sound Installation San Francisco, CA
 2017 Finalist, FETA Prize in Sound Art Miami, FL
 2016 New Music USA: QuBit SOUNDART2016 Lower East Side, Manhattan, NYC
 2015 Finalist, FETA Prize in Sound Art Miami, FL
 2014 West Harlem Art Fund: *Under the Viaduct* Sound Art Installation
 2014 National Science Foundation (NSF) *Seismic Sound Lab: Sights, Sounds and Perception of Earth as an Acoustic Space*
 2011 Biodiversity Institute and Hall Center for the Humanities: *Mutatis Mutandis* installation
 2010 Spencer Museum of Art: *Reflection/Projection* sound installation

RESIDENCIES

2018 La Cité Internationale des Arts Artist Residency Paris, France
 2017 IRCAM Research Residency Music Representation Team Paris, France
 2016 MassMoCA Artist Residency North Adams, MA
 2016 Pioneer Works Center for Art and Technology Residency Program, Brooklyn, NY
 2015 Signal Culture Artist Residency, Owego, NY

PAPERS AND CONFERENCES

- 2014 *Toward an Acoustemology of Sound Art: Dice Roll (2014)* Columbia Ethnomusicology
- 2013 *Swarm Theory and Sonic Emergence: Swarm and Drone*, DorkBot Conference, Prentis Hall, Columbia University
- 2013 Recipient of *Rummer Design Award* Highest Award granted to student in EECS department University of Kansas
- 2011 *Mutatis Mutandis* audio-visual installation, New Interfaces for Musical Expression (NIME) University of MI, Ann Arbor
- 2010 Keynote Speaker Undergraduate Honors Research Symposium Sound in Data: Perceiving Climate Change, KS

LIST of SOUND-BASED ART WORK

- 2018 L'HOSTE Art Contemporain Gallery–Arles, France
De Tentacules - sound sculpture
Too Flesh - sound sculpture
- 2017 INVISIBLE CHOIRS, *Solo Exhibition* - Pro Arts Gallery–Oakland, CA
Activations, sound sculpture
Rocks in roll, sound sculpture
Long Live the New Flesh, sound sculpture
Fingers, digital renderings
Engine Errors / Self-Portrait, mixed-media projection
- 2017 *Neural Ordinance*, multi-channel audio composition, CCRMA Stanford University–Palo Alto, CA
Neural Ordinance, UCSD–San Diego, CA
- 2017 *autonomous sense object*, sound sculpture - Engine Room International Sound Arts–London, England
autonomous sense object - Magnitudes Group Show, ART345 Gallery–East Harlem, NYC
- 2016 *BANDS WIDTH*, sound sculpture - “Home” Group show, Pro Arts Gallery–Oakland, CA
HiveForm, sound sculpture - FLUX art fair, Corn Exchange Building–Harlem, NYC
- 2015 *HiveMind*, sound sculpture - Pioneer Work, Red Hook, Brooklyn (permanent)
Triadic Attractor, sound sculpture, Pioneer Works, Red Hook, Brooklyn
 “The Hour of the Star”, Connelly Theater, Sound Design - Lower East Side, NYC
- 2014 *SeismoDome*
 immersive multichannel audio, Hayden Planetarium–American Museum of Natural History, NYC
Under the Viaduct
 public park sound installation (commissioned by West Harlem Art Fund), Riverside Park, NYC
Dice Roll, sound sculpture - Wallach Gallery - Columbia University, NYC
Push-Pole, sound sculpture - Wallach Gallery - NYC
- 2012 *MetaWebern no.2* - sound and media, *Cryptograph: an exhibition for Alan Turing*, Spencer Museum of Art
Mutatis Mutandis - sound installation - New Interfaces of Musical Expression (NIME), Ann Arbor, MI
Mutatis Mutandis - sound installation - Hall Center – Lawrence, KS
- 2011 *Reflection/Projection* multi-channel sound installation – Spencer Museum, University of Kansas
Impulse Response, sound installation– Wonderfair Art Gallery - Lawrence, KS
- 2010 *Awkward Encounters*, installation - Great Plains Museum, Lincoln, NE

SELECTED PERFORMANCES AS A PERFORMER

- 2014 With *El Portal* Group:
 Umbria Jazz Festival, Umbria, Italy
 Sottobosco - Pisa, Italy
 Cellar Theory - Naples, Italy
 Un Tubo - Siena, Italy
- 2013 Casa Del Jazz, Rome, Italy
- 2012 With *El Portal*:
 Ex Wide - Pisa, Italy
 Cockney London Pub - Correzzola
 Moroder - Ancona
 Jazz Club Torino, Torino, Italy
- 2011 Young Jazz Festival, Foligno, Italy
 TeatroC, Livorno, Italy
 Notte Fiorentina, Florence, Italy
- 2008 Feeniks, Helsinki, Finland
 Sibelius Academy, Helsinki, Finland
- 2008 *IAJE*, Lucerne, Switzerland

TECHNICAL SKILLS

- PROGRAMMING Python, Java, Matlab, VHDL, Experience with C/C++, Assembly Language, PSPICE, Simulink
- WEB HTML5, CSS, PHP, Javascript, JQUERY, WebAudioAPI
- AUDIO Supercollider, Max/MSP/Jitter, RTCMix, Processing, Arduino, Logic Pro, Pro Tools, Ableton Live
- SOFTWARE Adobe Photoshop, InDesign, and Illustrator, Microsoft Office Suite, VISIO

RELEVANT COURSEWORK

Signal and System Theory, Control Systems, Network Analysis, Digital Signal Processing, Analog/Digital Electronics, Electromagnetics, C ++ Programming, Digital Logic Design

FABRICATION

EAGLE PCB Layout, Soldering and PCB, Wood and Metal Shop Fabrication, 3D Printing