

NOLAN LEM
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EDUCATION

- Ph.D. Computer-Based Music Theory and Acoustics** *June 2022 (expected)*
Stanford University, Stanford, CA
Dissertation: “Synchronous Sound: Strategies for Collective Sound Generation and Diffusion”
- M.F.A Sound Art** *May 2015*
Columbia University, New York, NY
- B.S. Electrical & Computer Engineering** *May 2013*
University of Kansas, Lawrence, KS
- B.M. Studio Music and Jazz Saxophone** *May 2008*
University of Miami, Miami, FL

SELECTED EXHIBITIONS

- 2022 “Qi” Solo Exhibition. Eks Rummet Gallery. Copenhagen, Denmark.
- 2022 “Tension Present and Erotikant” Exhibition. JIRSANDEL Gallery. Copenhagen, Denmark.
- 2021 “Autonomous Sense Object” Video Documentation. London Fetish Film Festival, London, UK.
- 2020 “In Praise of Idleness” Solo Exhibition. Galerija Alkatraz, Ljubljana, Slovenia.
- 2020 “Engine Errors / Self-portrait” ICCC. Coimbra, Portugal
- 2019 “Menagerie” Solo Exhibition. Danish National Museum of Music. Copenhagen, Denmark.
- 2019 “Tout ce qu’on a construit” Group show. Vermont Studio Center. Johnson, Vermont.
- 2019 “Kuramoto Cycles” *Sound Happenings* Group show. Cantor Arts Museum, Stanford, CA. USA
- 2018 “Scratch” / “Noise Ordinance” *Escuchar*. Group show. Museum of Modern Art Buenos Aires (MAMBA), Buenos Aires, Argentina.
- 2018 “Tentacule” / “Activation” *Bruire*. Two person show. LHOSTE ART CONTEMPORAIN, Arles, France
- 2017 “INVISIBLE CHOIRS” Solo Exhibition. Pro Arts Gallery, Oakland, California. USA
- 2017 “Autonomous Sense Object” Group Exhibition. Morley Gallery, London, UK.
- 2017 “Autonomous Sense Object” *Magnitudes* Group Exhibition. Art345 Gallery, Harlem, NYC. USA
- 2016 “Neural Ordinance” PIONEER WORKS, Brooklyn, NYC. USA
- 2016 “BANDSWIDTH” *home*. Group show. Pro Arts Gallery, Oakland, CA. USA
- 2016 “HiveForm” *Flux Art Fair*. Group show. Harlem, NYC. USA
- 2015 “Hivemind” *Amplitudes*. Group show. PIONEER WORKS. Brooklyn, NYC. Permanent Collection
- 2014 “Dice Roll” / “Push-pull” Group show. Wallach Gallery. New York, NYC. USA
- 2014 “Seismodome” Hayden Planetarium at the American Museum of Natural History. New York, NYC.
- 2014 “Under the Viaduct” *Public Art Installation* River Side Park. Harlem, NYC. USA
- 2012 “Metabach encapsulate no.2” *Cryptograph: An Exhibition for Alan Turing* Group Show, Spencer Museum of Art. Lawrence, KS.
- 2012 “Mutatis Mutandis” *New Interfaces for Musical Expression Conference*. Ann Arbor, MI. USA
- 2012 “Mutatis Mutandis” Hall Center for the Humanities. Lawrence, KS. USA
- 2010 “Awkward Encounters” Great Plains Museum. Lincoln, NE. USA

GRANTS - AWARDS

Fulbright Scholarship Sound and Music Computing - Aalborg University Copenhagen.	2020
POWSOLO Sound Art Award: Best Artistic Discovery , Amsterdam, Netherlands	2020
MATA Festival Commission , New York City, NY	2020
2019 FETA Prize in Sound Art , Miami, FL. USA	2019
Mellon Dissertation Fellowship , Stanford University. Stanford, CA	2019
European Art-Science Technology Network for Digital Creation (EASTN-DC) Grant , Copenhagen, Denmark.	2019
Europe Center Grant , Stanford University. Stanford, CA	2018
Finalist, FETA Prize in Sound Art , Miami, FL.	2017
3rd Place, Engine Room International Sound Arts Competition , London, UK.	2017
New Music USA: QuBit, SOUNDART2016 , New York City, NY	2016
Finalist, FETA Prize in Sound Art , Miami, FL	2015
National Science Foundation (NSF) , Seismic Sound Lab at Lamont-Doherty Observatory at Columbia University. New York City,	2014

TEACHING EXPERIENCE

Sound Arts Workshop , <i>Stanford University</i>	<i>Summer 2019</i>
Taught week-long intensive workshop that focused on hands-on approaches to working with sound as mediated by kinetic, light, and moving imagery.	
Music Signal Processing , <i>Stanford University</i>	2018
The course presented fundamental elements of digital audio signal processing, such as sinusoids, spectra, the Discrete Fourier Transform (DFT), digital filters, z transforms, transfer-function analysis, and basic Fourier analysis in the discrete-time case. Matlab is used for in-class demonstrations and homework/lab assignments.	
Music, Mind, and Human Behavior , <i>Stanford University</i>	2018
An introductory exploration of the question of why music is a pervasive and fundamental aspect of human existence. The class introduced aspects of music perception and cognition as well as anthropological and cultural considerations.	
Fundamentals of Computer-Generated Sound , <i>Stanford University</i>	2017
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 , <i>Stanford University</i>	2017
Using 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 , <i>Stanford University</i>	2016
Integrating perception, psychoacoustics, cognition, and neuroscience of music, this course taught undergraduate and graduate students the fundamentals of conducting experimental psychoacoustic studies with a focus on previous research in the field.	
Physical Interaction Design for Music , <i>Stanford University</i>	2016

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.

Sound: Physics and Perception, *Columbia University* 2014

Co-taught studio course related to psychoacoustics, wave propagation, biological sound, physiology of hearing, and electronic sound production. Designed and carried out experiments demonstrating sonic principles.

RESIDENCIES

Statens Værksteder for Kunst , Artist Residency	Copenhagen, Denmark. <i>Winter 2021</i>
Bemis Center for Contemporary Art , Artist Residency	Omaha, NE. <i>Summer 2020</i>
GRAME (centre national de création musicale) , Research Residency	Lyon, France <i>Winter 2020</i>
European Art-Science-Technology Technology Network For Digital Creation (EASTN-DC) , Artist Residency	Copenhagen, Denmark <i>2020</i>
Vermont Studio Center , Full Fellowship	Johnson, VT. <i>April 2019</i>
GRAME (centre national de création musicale) , Research Residency	Lyon, France. <i>2019</i>
Musée des arts et métiers , Artist Residency	Paris, France. <i>Summer 2018</i>
IRCAM , Research Residency - Music Representation Team	Paris, France <i>Summer 2017</i>
MassMoCA , Arts Residency	North Adams, MA <i>Summer 2016</i>
PIONEER WORKS , Artist Residency	Brooklyn, NYC <i>Summer 2015</i>
Signal Culture , Artist Residency	Owego, NY <i>Summer 2014</i>

PUBLICATIONS AND CONFERENCE HISTORY

“Beat Perception in the Swarm: a look at tapping synchronization strategies using coupled metronomes” Neurosciences and Music VII: Connecting Music across the Lifespan. Aarhus, Denmark	2021
‘Extracting Beat from a crowd of coupled metronomes: effects of coupling strength and timbre on tapping synchronization’. International Conference on Music Perception and Cognition. Sheffield, UK	2021
“Menagerie: exploring the audio-visual rhythms of violence through data, triggers, and swarms” Proceedings of the Sound and Music Computing Conference (SMC). Torino, Italy	2020
“Art and AI: ‘Engine Errors / self-portrait’” International Conference on Computational Creativity (ICCC). Coimbra, Portugal	2020
“Extracting beat from a crowd of loosely coupled, concurrent periodic stimuli” Acoustical Society of America (ASA). San Diego, CA	2019
“Extracting beat from a crowd of loosely coupled, concurrent periodic stimuli” The Predictive Brain Conference. Marseilles, France	2019
“Kuroscillator: A Max-MSP Object for Sound Synthesis using Coupled-Oscillator Networks”. 14th International Symposium on Computer Music Multidisciplinary Research. Marseilles, France	2019
“Sound in Multiples: Synchrony and Interaction Design using Coupled-Oscillator Networks”. Sound and Music Computing Conference (SMC). Málaga, Spain.	2019
“Art and AI”. Artificial Intelligence (AI) Salon. Stanford, CA.	2019
Keynote Speaker. Symposium on Art and Technology. UTEC (Universidad Tecnológica del Uruguay). Montevideo, Uruguay	2019

“Velcro as a sensory interface and erotic material”. ‘Politics of the Machine: Art and After’ Conference. Copenhagen, Denmark 2017

“Swarm Theory and Sonic Emergence: Swarm and Drone”. DorkBot Conference. Columbia University. NYC, NY 2014

“Mutatis Mutandis: Sonification of Ice-Core Data”. New Interfaces for Musical Expression (NIME) Conference. University of Michigan. Ann Arbor, MI 2011

“Sound in Data: Perceiving Climate Change”. Keynote Speaker, Undergraduate Research Symposium. University of Kansas. Lawrence, KS 2010

“On Notational Interfaces for Free Jazz”. Maynooth Music Composition. Maynooth, Ireland 2009

“International Association of Jazz Educators (IAJE)”. Representative. Lucerne, Switzerland 2008

CONFERENCE REVIEWER

“Sound and Music Computing (SMC) Conference”. 2019, 2020, 2021

“New Interfaces for Musical Expression (NIME) Conference”. 2020, 2021

TECHNICAL SKILLS

Creative Coding: Arduino, Processing, Max/MSP/Jitter, Supercollider, CHuCK, RTCmix, Faust

Programming: Python, Matlab, C/C++, Ruby, Shell, SQL, git, L^AT_EX

Web: HTML/CSS, JQuery, Django, PHP, Javascript, WebAudioAPI

Hardware Design: Eagle PCB Design, Blender, FUSION360

Experience with: VHDL, Assembly

Relevant Coursework: Deep Learning for Audio, Audio Signal Processing, Perceptual Audio Coding, Spatial Audio, Psychoacoustics

Languages: English (native), French (fluent)