

NOLAN LEM  
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## Education

PhD Stanford University (expected) Center for Computer Research in Music and Acoustics (CCRMA) Computer-Based Music Theory and Acoustics	2020
MFA Columbia University	2015
University of Kansas Bachelor of Science in Electrical Engineering (BSEE)	2013
University of Miami (FL) Bachelor of Music: Studio Music and Jazz Saxophone (BM)	2008

## Exhibition History

2020	Solo Exhibition, Alkatraz Gallery – <i>Black Box</i> . Ljubljana, Slovenia. (upcoming)
2019	Nationalmuseet For Musik (Danish National Museum of Music) – <i>Menagerie</i> . Copenhagen, Denmark.
2019	Vermont Studio Center – <i>Tout ce qu'on a construit</i> . Johnson, Vermont. USA.
2019	Anderson Collection, Cantor Arts Museum – <i>Sound Happenings</i> . Stanford, CA
2019	Group Show – <i>GRID</i> audio-visual exhibition – Kuramoto Cycles. Stanford, CA
2018	Museum of Modern Art Buenos Aires (MAMBA) – “ESCUCHAR” Show – <i>Scratch, Noise Ordinance</i> . Buenos Aires, Argentina.
2018	Two-Person Exhibition, L’HOSTE Art Contemporain – <i>Bruire</i> . Arles, France.
2018	CODAME ART+TECH Festival – <i>Activations</i> . San Francisco, CA
2017	Solo Exhibition, Pro Arts Gallery - <i>INVISIBLE CHOIRS</i> . Oakland, CA
2017	Group Exhibition, Morley Gallery – <i>Autonomous Sense Object</i> . London, UK.
2017	Group Exhibition, Art345 Gallery – <i>Magnitudes</i> . Harlem, NYC.
2016	Pioneer Works – <i>Neural Ordinance</i> . Brooklyn, NYC.
2016	Group Exhibition, Pro Arts Gallery – <i>Home Show</i> . Oakland, CA.
2016	Group Exhibition, Flux Art Fair – <i>HiveForm</i> . Harlem, NYC.
2015	Pioneer Works – <i>Amplitudes</i> – Brooklyn, NYC. Permanent Collection.
2014	Wallach Gallery – <i>Dice Roll, Push-Pole</i> – NYC. USA.
2014	Hayden Planetarium at the American Museum of Natural History – <i>Seismodome</i> – NYC
2014	Public Art Installation – <i>Under the Viaduct</i> . Harlem, NYC.
2012	Group Exhibition, Spencer Art Museum – <i>Cryptograph: an exhibition for Alan Turing</i> . Lawrence, KS. USA

- 2012 New Interfaces for Musical Expression (NIME) Exhibition. *Mutatis Mutandis* – Ann Arbor, MI.
- 2012 Hall Center for the Humanities – *Mutatis Mutandis*. University of Kansas.
- 2011 Spencer Art Museum – *Reflection/Projection*. Lawrence, KS.
- 2010 Great Plains Museum – *Awkward Encounters*. Lincoln, NE.

## Residencies

- 2020 Bemis Center for Contemporary Art Residency – Omaha, NE. (upcoming)
- 2020 GRAME (centre national de creation musicale) – Research Residency. Lyon, France. (upcoming)
- 2019 EASTN-DC International Artist Residency, Aalborg University Copenhagen – Sound and Music Computing Department – Copenhagen, Denmark.
- 2019 Vermont Studio Center Residency Full Fellowship – Johnson, VT.
- 2019 GRAME (centre national de creation musicale) – Research Residency. Lyon, France.
- 2018 Musée des arts et métiers – Artist Residency – Paris, France.
- 2018 Cité internationale des arts – Artist Residency – Paris, France.
- 2017 IRCAM (L’Insitut de recherche et coordination acoustique/musique) – Research Residency – Music Representation Team – Paris, France.
- 2016 MassMoCA – Artist Residency – North Adams, MA. USA.
- 2016 Pioneer Works – Artist Residency – Brooklyn, NYC.
- 2015 Signal Culture – Artist Residency – Owego, NY. USA

## Grants – Awards

- 2019 2019 FETA Prize in Sound Art – Miami, FL
- 2019 European Art Science Technology Network for Digital Creativity Grant
- 2018 Sennheiser Store, Sound Installation – San Francisco, CA.
- 2018 Europe Center Grant – Stanford University.
- 2017 Finalist, FETA Prize in Sound Art – Miami, FL. USA
- 2017 3<sup>rd</sup> Place – Engine Room International Sound Arts Competition – London, UK.
- 2016 New Music USA: QuBit – SOUNDART2016 – Lower East Side, NYC.
- 2015 Finalist, FETA Prize in Sound Art – Miami, FL.
- 2014 National Science Foundation (NSF) – Seismic Sound Lab: Sights, Sounds, and Space
- 2014 West Harlem Art Fund – Riverside Park public sound installation
- 2013 Rummer Design Award – Electrical Engineering Department University of Kansas.
- 2011 Biodiversity Institute: Hall Center for the Humanities at University of Kansas.

## Publications – Papers – Conferences – Keynotes

- 2020 Reviewer – International Conference on New Interfaces for Musical Expression (NIME)
- 2019 “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” Predictive Brain Conference. Marseille, France.
- 2019 “Kuroscillator: A Max-MSP Object for Sound Synthesis using Coupled-Oscillator Networks” – 14<sup>th</sup> International Symposium on Computer Music Multidisciplinary Research. Marseille, France.
- 2019 “Sound in Multiples: Synchrony and Interaction Design using Coupled-Oscillator Networks” – Sound and Music Computing Conference (SMC). Málaga, Spain.
- 2019 Keynote Speaker – Artificial Intelligence (AI) Salon – *Art and AI*. Stanford, CA
- 2019 Music Program Reviewer – Sound and Music Computing
- 2018 Keynote Speaker – UTEC (Universidad Tecnológica del Uruguay). Symposium on Art and Technology. Montevideo, Uruguay.
- 2018 “Velcro as a sensory interface and erotic material” – published in British Computer Society journal. UK.
- 2018 “Velcro as a sensory interface and erotic material” – “Politics of the Machine: Art and After” Conference. Aalborg University Copenhagen, Denmark.
- 2014 “Swarm Theory and Sonic Emergence: Swarm and Drone” – DorkBot Conference, Columbia University. NYC.
- 2011 “Mutatis Mutandis” Audio Visual Installation – New Interfaces for Musical Expression (NIME) – Ann Arbor, MI.
- 2010 Keynote Speaker Undergraduate Research Symposium. “Sound in Data: Perceiving Climate Change” – University of Kansas. Lawrence, KS.
- 2009 Maynooth Composition Symposium – “On Notational Interfaces for Free Jazz” – Maynooth, Ireland.
- 2008 International Association of Jazz Educators (IAJE) – Lucerne, Switzerland

## TEACHING EXPERIENCE

### STANFORD UNIVERSITY

- Summer 2019 Sound Arts Workshop  
Taught week-long intensive workshop that focused on hands-on approaches to working with sound as mediated by kinetic, light, and moving imagery.
- Fall 2018 Music Signal Processing (MUS320)  
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.

- Spring 2018      Music, Mind, and Behavior  
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.
- Fall 2017      Fundamentals of Computer Generated Sound  
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.
- Spring 2017      Neuroplasticity in Musical Gaming  
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.
- Winter 2016      Psychophysics and Music Cognition  
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.
- Fall 2016      Physical Interaction Design for Music  
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

- Winter 2014      Sound: Physics and Perception  
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.

## LIST OF WORKS

- 2019 Menagerie – sculpture  
Metal, wood, solenoids, plastics, electronics, lights
- 2019 Tout ce qu'on a construit – installation  
Metal, DC motors, electronics, steel wire
- 2019 Neural Ordinance – 16 channel spatial audio
- 2018 Kuramoto Cycles – 8 channel spatial audio
- 2018 Scratch – 4 channel audio  
Noise Ordinance – 4 channel audio
- 2018 Tentacule - sculpture  
Velcro, speaker cones, metal, wood, DC Motor, electronics
- 2017 Activation – sculpture  
Light switch, wood, electronics, computer
- 2017 Long Live the New Flesh  
Shoes, wood, steel, motors, fluorescent lights
- 2017 Fingers – digital renderings/photographs
- 2017 Rocks in Roll – sculpture  
River rocks, wood, mechanical gears, linkages, casters, electronics
- 2017 Activations – sculpture  
Light switches, plastics, 3D printed parts, mechanical elements, gears,  
aluminum, electronics
- 2017 Engine Error / Self-portrait – live projection and digital photography  
Digital photography, video projectors
- 2016 Autonomous Sense Object – sculpture  
Velcro, acrylic, 3D printed prosthetic fingers, leather, lace, speaker cones,  
motors
- 2015 BANDSWIDTH – sculpture  
Velcro, wood, pulleys, DC motors, plastics, electronics, lights
- 2015 HiveMind – installation  
porcelain, white clay, ceramic marbles, motors, fabric, electronics, lights,
- 2015 (six channels(six channels))" – installation

ceramics, cardboard tubing, speakers, electronics, computer

- 2015 Triadic Attractor – sculpture  
steel, aluminum, wood, neodymium magnets, sensor, electronics, motors, nine speakers
- 2015 Dice Roll – installation  
Dice, metal, wood, pulleys, electronics, motors, lights, fishing line, foam
- 2015 Push-pole – installation  
Metal, neodymium magnets, motors, lights, computer, electronics
- 2014 my orbital is your orbital – participatory installation for iphones  
iPhones, software, performers
- 2013 Metabach encapsulate no.2  
Digital Renderings, sound
- 2013 Mutatis Mutandis – audio visual installation  
Multi-channel audio (16), projectors, aluminum sheets, printed materials
- 2013 Reflection Projection – sound installation  
Multi-channel audio (16)

## Selected Performances

- 2014 with *El Portal* - "Slow Grind" Tour  
Umbria Jazz Festival – Umbria, Italy  
Sottobosco – Pisa, Italy  
Cellar Theory – Naples, Italy  
Un Tubo – Sienna, Italy
- 2013 with *El Portal*  
Casa del Jazz— Rome, Italy  
Cockney London Pub Jazz Club – Correzzola, Italy  
Moroder – Ancona, Italy  
Jazz Club Torino – Torino, Italy
- 2012 Ex-Wide – Pisa, Italy
- 2011 with *El Portal* – "New Trophy" Tour  
Young Jazz Festival – Foligno, Italy  
TeatroC – Livorno, Italy  
Notte Fiorentina – Florence, Italy
- 2008 Feeniks Jazz Club –Helsinki,Finland