Luke Dzwonczyk

composer, creative technologist, researcher • he/him/his • dz.luke@berkeley.edu

Education

2021 – Present **University of California, Berkeley** – Berkeley, CA
M.A./Ph.D. in Music Composition and Music Technology
expected graduation: May 2027

2016 – 2020 **University of California, Berkeley** – Berkeley, CA
B.A. in Music and Computer Science

Awards

October 2023 **Global Asian Creative Awards, Gold Tier:** *Song Without Words*, Olivia Ting
multi-media installation

April 22, 2023 **Best Composition:** *The AI's Lament: Technological Apocalypse*, with Mathew Muntz
fixed media with neural audio synthesis
Cal Performance's Human and Machine Song Contest, UC Berkeley

Teaching experience

Spring 2025 **Graduate Student Instructor (GSI), Music 158A: Sound and Music Computing with CNMAT Technologies**
Instructor for a course in learning the Max programming environment and electronic music history and synthesis techniques

Fall 2024 **GSI, Music 30: Computational Creativity for Music and the Arts**
Helped develop course materials and assignments; gave a lecture on neural networks; led lab sections in which students learned through hands-on coding; graded assignments

Spring 2024 **GSI, Music 29: Music Now**
Taught lab sections in which students learned about the fundamentals of sound and music; participated in course lectures; graded assignments

Fall 2023 **GSI, Music 30: Computational Creativity for Music and the Arts**
Helped develop course materials and assignments; gave a lecture on digital audio and a lecture on neural networks; led lab sections in which students learned through hands-on coding; graded assignments

Spring 2023 **GSI, Music 158A: Sound and Music Computing with CNMAT Technologies**
Assisted in class and graded student assignments

Fall 2022 **GSI, Music 108: Music Perception and Cognition**
Graded student exams and final projects; gave a lecture on my research

Spring 2022 **Reader, Music 30: Computational Creativity for Music and the Arts**
Created lab materials (Python notebooks, Max patches) for students to experiment with course concepts; helped create and grade course assignments.

Fall 2018 **Academic Intern, CS 61B: Data Structures**
Guided students in debugging their coding projects for an undergraduate data structures course

Publications

2025 **Unsupervised Text-to-Sound Mapping via Embedding Space Alignment**
Dzwonczyk, L. & Cella, C.-E.,
Proceedings of the 28th International Conference on Digital Audio Effects (DAFx), Ancona, Italy, September 2025

2025 **An Overview on CNMAT Technologies and Future Directions**
Cella, C.-E., Campion, E., Wagner, J., Dzwonczyk, L., & Kulpa, J.,
International Computer Music Conference, June 2025)

2025 **Generating Music Reactive Videos by Applying Network Bending to Stable Diffusion**
Dzwonczyk, L., Cella, C.-E., & Ban, D.
Journal of the Audio Engineering Society
The Sound of Digital Audio Effects, Part I, Vol. 73, No. 6, 2025 June
Paper: http://dx.doi.org/10.17743/jaes.2022.0210
Website: https://dzluke.github.io/JAES2025/

2024 **Network Bending of Diffusion Models for Audio-Visual Generation**
Dzwonczyk, L., Cella, C.-E., & Ban, D.
Proceedings of the 27th International Conference on Digital Audio Effects (DAFx), Surrey, United Kingdom, August 2024
Paper: https://arxiv.org/pdf/2406.19589
Website: https://dzluke.github.io/DAFX2024/

2022 **Neural Models for Target-Based Computer-Assisted Musical Orchestration: A Preliminary Study**
Cella, C.-E., Dzwonczyk, L., Saldarriaga-Fuertes, A., Liu, H., & Crayencour, H.-C.
Journal of Creative Music Systems
Paper: https://doi.org/10.5920/jcms.890

2022 **Source Separation Methods for Computer-assisted Orchestration**
Dzwonczyk, L., Chédin, L., Saldarriaga-Fuertes, A., Crayencour, H.-C., & Cella, C.-E.
Proceedings of the 3rd Conference on AI Music Creativity (AIMC)
Paper: https://doi.org/10.5281/zenodo.7088323

2020 **A Study on Neural Models for Target-Based Computer-Assisted Musical Orchestration**
Cella, C.-E., Dzwonczyk, L., Saldarriaga-Fuertes, A., Liu, H., & Crayencour, H.-C.
Proceedings of the 2020 Joint Conference on AI Music Creativity (AIMC)
Paper: https://doi.org/10.30746/978-91-519-5560-5

Research

2023 **Orchidea database server**
Added a feature to Orchidea that greatly reduced computation time for batch processing by loading the sample database at startup as a server and routing client requests to the server. (C++)

October 2022 – January 2023 **Audio visualization with Stable Diffusion**
Using Stable Diffusion to visualize audio. By passing an FFT of a sound to Stable Diffusion, a static image is generated. Doing this over time creates a video visualization of the sound.

2021 **Real-time perceptual key heatmap**
Using a spatial representation of the 24 Western diatonic keys, the key heatmap uses visual cues to show performers which key they are most likely playing in. Created in MaxMSP as a final project for a course in Music Perception and Cognition. GitHub

2021 – 2022 **GameTrak instruments for the Berkeley Dance Project**

Using data from modified GameTrak controllers, created Max patches to synthesize audio in real time. Dancers used the GameTrak devices to create and control the sound. GitHub

2021 – 2024 ***La Nuit Sauve***

Created a Python program that used Orchidea to orchestrate the audio of the film, creating a live "soundtrack" that mimicked and mirrored the recorded audio. The parameters of the orchestration evolved over time following a predetermined set of rules and probabilities.

November 2020 – May 2022 **Source separation methods for computer-assisted orchestration**

Implementing pre-existing source separation methods (supervised and unsupervised) as a pre-processing step before performing orchestration with Orchidea.

2020 **Release of Max/MSP/Jitter Depot 2.0**

Prepared the new release of the Max/MSP/Jitter depot, including testing, preparation, and organization of existing Max patches and inclusion of new patches

February 2020 – March 2021 **Applying neural networks to computer-assisted orchestration**

Experimenting using deep neural networks as a solution to the task of computer-assisted orchestration. My work focused on using parametric classifiers such as SVM, Random Forest, and KNN to have a baseline to compare against. Published in the 2020 joint conference on AI music creativity and the Journal of Creative Music Systems.

2019 – 2021 **Stompbox 2.0**

Collaborated with CNMAT staff to create a tool that uses a microcontroller to route input from up to 16 foot pedals into a custom Max object for use during live performance. Iterated through multiple possible designs, including versions with WiFi, with PoE, and with different microcontrollers. Link

2019 **Full Stack Web App**

Quantcast, San Francisco

Redesigned the website's search page, including back and front end. Included extensive error handling for user input, gaining experience in JavaScript, HTML/CSS, and React

2019 **OSC LED Controller**

Created a Python OSC server that communicated with MaxMSP to control eight addressable LED strips as part of an installation at CNMAT. LEDs responded in real time to input from a microphone placed near instrumentalists.

2018 **Error Detection Modeling for Cloud Applications**
OpsCruise, Sunnyvale
Modeled traffic flows on connected graphs to train a failure detection model for cloud applications

Compositions

2024 ***The Breathing of this Celestial Machine***
for fixed electronics, projection, and laser
premiered at SCOPE III, November 15 2024, at Wu Performance Hall, UC Berkeley
shown at the International Computer Music Conference 2025, Boston, MA

2023 ***The AI's Lament: Technological Apocalypse***, with Mathew Muntz
for fixed electronics and neural audio synthesis
premiered at Cal Performance's Human and Machine Song Contest, Wheeler Hall, UC Berkeley

2023 ***Complex Waves***
for fixed electronics and oscilloscope
premiered at SCOPE II, November 4, 2023 at CNMAT, UC Berkeley

2023 ***From within***
for solo bass and fixed electronics
premiered April 24, 2023 at CNMAT, UC Berkeley by Richard Worn

2023 ***Ephemera***
for orchestra
read by the UC Berkeley Symphony Orchestra, March 21, 2023

2022 ***Four Waves***
for fixed electronics and oscilloscope
premiered at SCOPE, November 5, 2022 at CNMAT, UC Berkeley

2022 ***The Oratory of Saint Philip Neri***
for solo voice
premiered April 29, 2022 at Mosswood Chapel, Oakland, CA by Nicholas Isherwood
presented December 6, 2022 at ISMIR 2022 in Bengaluru, India

2021 ***A Release from the Covering of Clay***
for solo voice and fixed electronics
premiered February 18, 2022 by Amy Foote at Hertz Hall, UC Berkeley

Installations

Oct. 2023 — ***Song Without Words***, Olivia Ting
sound design for multi-media installation with sensors and haptics, part of Leonardo's CripTech incubator
opened October 2023 at Beall Art Center, Irvine, CA
previewed July 27, 2023 at SF Exploratorium

Oct. 8, 2022 — ***La Nuit Sauve***, Étienne Chambaud
software development and sound design for multi-media installation
opened at Lille Métropole Museum of Modern, Contemporary and Outsider Art, Lille, France
showed April 20-27, 2024 at CuratingAI, 120710 Gallery, Berkeley, CA

May 3, 2022 — ***Heliosonos***
sound installation with radios
CNMAT, UC Berkeley

May 10, 2019 — ***sun/sets***
light installation
CNMAT, UC Berkeley

Performances

April 26, 2024 — Live electronics with Alois Cerbu (bass, electronics)
Bizarre Bazaar, Worth Ryder Art Gallery, UC Berkeley

November 18, 2022 — Laetitia Sonami Residency Workshop Exhibition
performance with Aine Nakamura, using live neural audio processing
CNMAT, UC Berkeley

April 15, 2022 — *etoili*, Andrew Blanton
vocalist
Portal Refractions: A New Art City Physical Activation
Gray Area, San Francisco, CA

2019 — *The English Garden* concert
performed "Let Us Garlands Bring" by Gerald Finzi
Hertz Hall, UC Berkeley

2019 – Present	UC Berkeley Chamber Chorus Officer in Leadership Board
2017 – 2018	UC Berkeley University Chorus
2017 – 2018	Choir Section Leader College Avenue Presbyterian, Oakland, CA
2012 – 2016	DJ various performances and locations

Sound design

May 7, 2023	*Cicada*, Aine Nakamura, Olivia Ting voice, movement, projection, live electronics worked with the artist to develop the electronics, which I performed live CNMAT, UC Berkeley
Oct. 22, 2022	*Sublimation* sound design/technical development for dance performance with Kinetech Arts David Ruth Glass Sculpture Studio, Oakland CA
March 9, 2022	*Passage* sound design/technical development for dance performance with Kinetech Arts Mondavi Center for the Performing Arts, UC Davis
Feb. 19, 2022	*If Then: Explorations in Dance Choreography Within Computational Environments* sound design/technical development for dance performance with Kinetech Arts Zellerbach Playhouse, UC Berkeley

Industry experience

Summer 2019	**Quantcast (Software Engineering Intern)** – San Francisco, CA Rebuilt the website's search page using Java for the backend and JavaScript for the frontend. Gained experience with many software tools such as Docker, Terraform, Jenkins, AWS S3, and HAProxy. Worked independently to write, test, and release code with guidance and feedback from my mentor and team

Summer 2018 **OpsCruise (Software Engineering Intern)** – Sunnyvale, CA
Created a graph-based traffic model to optimally detect application failures. Suggested a Markov chain prediction model that brought prediction errors down from 30% to 10%. Completed the internship with a large research project that helped inform the company of what methods to include in its product.

Talks and presentations

December 2024 Artist and research talk
Music 159: Computer Programming for Music Applications UC Berkeley

October 2024 Artist and research talk
Music 30: Computational Creativity for Music and the Arts, UC Berkeley

November 2023 Artist and research talk
Music 30: Computational Creativity for Music and the Arts, UC Berkeley

November 2023 Artist and research talk
Music 90: Making Music, UC Berkeley

November 2022 Recent projects in Music and ML
Music 108: Music Perception and Cognition

November 2022 Recent research: *La Nuit Sauve* and Sound-to-Image
CNMAT OpenLab

September 2022 Source Separation Methods for Computer-assisted Orchestration
3rd Conference on AI Music Creativity

November 2021 *La Nuit Sauve*: "real-time" orchestration with Orchidea
CNMAT OpenLab

December 2020 Applying neural networks to the task of computer-assisted orchestration
UC Berkeley RISELab

November 2020 The Stompbox 2.0 and Computer-assisted Orchestration
CNMAT OpenLab

Arts administration

Nov. 15, 2024	SCOPE III: an audio-visual concert concert organizer and curator, Wu Performance Hall, UC Berkeley
May 2024 – May 2025	Treasurer and Secretary, CNMAT Users Group oversaw the writing of grants to fund a residency with Ensemble grouplove
Jan. – Nov. 2024	Audio-Visual Working Group created and organized working group with artist Kurt Hentschläger
Nov. 4, 2023	SCOPE II: an audio-visual concert concert organizer, curator, and technical director, CNMAT, UC Berkeley
May 2023 – May 2024	President, CNMAT Users Group oversaw organization of a residency with the Hinge Ensemble to play new student works
Nov. 5, 2022	SCOPE: an audio-visual concert concert organizer, curator, and technical director, CNMAT, UC Berkeley

Professional memberships

2025 – Present	Audio Engineering Society (AES)
2018 – 2020	Upsilon Pi Epsilon, Computer Science Honors Society, UC Berkeley

Technical skills

Programming languages
Advanced: Python, Max/MSP
Proficient: C++, Arduino, Java, JavaScript, HTML/CSS
Familiar: C, SQL

Software
Ableton Live, LaTeX, Git

Instruments
Voice, Piano, Guitar

Languages
English (fluent), French (reading: proficient), Spanish (reading: proficient)