

Aaron Karp

Education

- 2017-2019 **MA in Digital Musics**, *Dartmouth College*, Hanover, NH.
Focus: *Audio Signal Processing* and *Machine Learning*
- 2013-2017 **BS in Computer Science, Music**, *Northwestern University*, Evanston, IL.
Focus: *Signal Processing*, *Interfaces*, and *Artificial Intelligence*

Research

- 2017-2019 *Master's Thesis, Dartmouth College*
- project ***Prying Ears: A Critical Response to Mass Audio Surveillance***
- Created theoretical definitions for machine listening and audio surveillance
 - Built a real-time system named the Acoustic Counterfeit Machine (ACM) in Python that hides sound from methods of mass audio surveillance using a custom audio fingerprinting database, speech reconstruction, and an LSTM neural network
 - Designed an interactive sound art installation piece using the ACM
 - Awarded "Best Graduate Research Writing" from Dartmouth College for proposal
- 2016-2017 *Interactive Audio Lab, Northwestern University*
- project ***Haptic Equalizer***
- Designed a physical system which allows users to create complex line graphs by touch in real-time, letting people with visual impairments directly manipulate audio effects using industry-standard "graphic" representations
 - Built in C++ using OpenCV image-recognition library, a custom JUICE audio plugin, and Ableton Live.
 - Awarded Runner-up for "Best Presentation" at the 2017 ACM Audio Mostly Conference in London
- project ***Non-Visual Audio Editing for Older Adults***
- Prototyped a phone-based system in Python and Twilio for editing speech recordings using a standard landline keypad
 - Presented as a paper at 2016 ASSETS conference

Experience

Vocational

- 2021-Present **Academic Data Analyst and Systems Engineer**, Brown University.
Conduct demographic analyses of various programs and grants for DEI accountability; automate processes in the College to improve workflow and increase student engagement through personalized outreach; connect disparate internal data sources to investigate questions from the College Deans; develop and optimize algorithmic solutions to University-wide problems (e.g. advisor matching, enrollment predictions, grant allocations, etc.); lead the University's course feedback team, managing the technical system as well as the faculty and student communications; serve as the primary academic advisor for a group of first- and second-years.
- 2020-2021 **Data Analyst Intern**, Formlabs.
Created web-based tools in Python and Flask for visualizing complex sensor data for technical and non-technical audiences; designed Bayesian models estimating success factors over large data sets of 3D printers; investigated internal data with SQL and Python to answer a wide range of questions from Engineering and R&D teams with quick turnaround time; developed internal APIs in Python to simplify the AWS data collection and analysis process.
- 2019-2020 **Visiting Researcher**, Kyoto University of Art and Design.
Advanced my practical art skills under Dr. Lyota Yagi and Dr. Yukio Fujimoto and was featured in two art exhibitions in Kyoto.
- 2019-2020 **Artistic Assistant**, Dr. Lyota Yagi.
Provided varied technical studio assistance, contributing to multiple large-scale exhibitions in Chengdu, Shenzhen, Seoul, Kyoto, and Tokyo, working with construction, curatorial, and artistic teams in Japanese and English to construct and install many site-specific artworks.
- 2018-2019 **Teaching Assistant**, Dartmouth College.
Taught lectures, graded, and managed office hours for courses including Programming for Interactive Audio-Visual Arts, Introduction to Sonic Arts, and Global Sounds.
- 2017 **Research Assistant**, *Learning Sciences Lab*, Northwestern University.
Led a team exploring accessibility of 3D fabrication software by creating and connecting a custom natural language understanding engine, gaze tracking software, and Blender.
- 2015 **IT Consultant**, *School of Education and Social Policy*, Northwestern University.
Solved software and hardware issues for faculty, staff, and summer courses.

Volunteer

- 2022 **The Arthur Liman Center for Public Interest Law**, Yale University.
Assisted in voter outreach for incarcerated individuals in Connecticut, writing and updating Python code to scrape and compile charge and voter information on all people currently housed in Connecticut prisons and jails.
- 2015-2017 **AMPED**, *Mentor*, Northwestern University.
Taught music production and songwriting skills to 15-17-year-old residents at the Cook County Juvenile Temporary Detention Center. Over 10-week sessions, each resident gained the technical ability to articulate their thoughts musically and produced two original songs.

Languages

Fluent: Python, Java, C++, SQL, JavaScript, MaxMSP

Comfortable: C, Supercollider, HTML, CSS, Shell, Matlab, Japanese

Familiar: React, AS3, Prolog, Android, PHP

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Selected Works

- 2022 *PolarCV* - VCV Rack Module
Available in the VCV Rack plug-in library, published in 2022
- 2022 *The Flock Takes Shelter in the Storm* - installation for transducers on glass
Installed at the Perry and Marty Granoff Center for the Creative Arts at Brown University in January 2022
- 2020 *Read / Write* - installation for vinyl and brush
Installed at Kyoto University of Art and Design, Kyoto, Japan in January 2020
- 2019 *Kaze Wa Wataru / The Wind Crosses* - installation for seven wind chimes
Installed at Wachu-an, Kyoto, Japan in November 2019
- 2018 *with in* - installation for four speakers and projection
Installed at Black Family Visual Arts Center at Dartmouth College in November 2018
- 2018 *Tare* - for String Quartet, 3 Sopranos, and Reel-to-Reel
Premiered by the Mivos Quartet at Dartmouth College in May 2018
- 2018 *Traces* - Sound Design for Animated Short Film
Premiered at the Digital Arts Exposition at Dartmouth College in June 2018
- 2018 *Introduction* - for Fixed Media
Premiered at the Digital Arts Exposition at Dartmouth College in June 2018
Played at the International Computer Music Conference in Daegu, South Korea in August 2018
- 2017 *Restrained Form* - installation of Wood, Metal Sheet, Rope, and Bass Shaker
Installed at Dartmouth College in December 2018

Awards and Honors

- 2021 **Excellence Award for Leadership**, Brown University.
Awarded for the overhaul of Summer/Semester Projects for Research, Internship, Teaching (SPRINT) programs, including an algorithmic grant matching process that created an additional \$400,000 in funding for student projects.
- 2019 **Luce Scholar**, Henry Luce Foundation.
Awarded a year-long national fellowship providing stipends, language training, and individualized professional placement in Asia. Apprenticed to a sound artist in Kyoto, Japan.
- 2019 **Invited Speaker**, Vanke Meisha Academy, Shenzhen, China.
Gave two lectures on experimental composition techniques and my artistic practice.
- 2018 **Best Graduate Research Writing**, Dartmouth College.
Awarded for my Master's thesis proposal.
- 2017 **Best Presentation, Runner Up**, Audio Mostly Conference.
Awarded for my presentation of the HaptEQ system in London.
- 2016 **Summer Undergraduate Research Grant**, Northwestern University.
Awarded a research grant to pursue work on audio production interfaces for people with visual impairments.

Publications

Aaron Karp. Prying ears: A critical response to mass audio surveillance. Master's thesis, Dartmouth College, 2019.

Aaron Karp and Bryan Pardo. Hapteq: A collaborative tool for visually impaired audio producers. In *Proceedings of the 12th International Audio Mostly Conference on Augmented and Participatory Sound and Music Experiences*, AM '17, pages 39:1–39:4, New York, NY, USA, 2017. ACM.

Robin N. Brewer, Mark Cartwright, Aaron Karp, Bryan Pardo, and Anne Marie Piper. An approach to audio-only editing for visually impaired seniors. In *Proceedings of the 18th International ACM SIGACCESS Conference on Computers and Accessibility*, ASSETS '16, pages 307–308, New York, NY, USA, 2016. ACM.