

# Amir Lankarani

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## EDUCATION

### Columbia University

New York, NY

*M.S. in Computer Science, GPA: 4.05/4.00*

May 2023

- Relevant Courses: Speech Recognition, Advanced Sound, Spoken LP, NLP, AI, Computer Vision, OS

### Columbia University

New York, NY

*B.A. in Biological Sciences, GPA: 3.94/4.00*

May 2020

- Relevant Courses: Digital Music, Ear Training, East Asian Music, Western Music, Python for Engineers

## TECHNICAL SKILLS

**Languages:** Python, C, C++, C#, Bash, JavaScript, Java

**Audio Tools:** Kaldi, Essentia, Ableton, Pure Data, Web Audio

**Other Tools:** PyTorch, PostgreSQL, Git, Google Cloud, D3.js, P5.js

**Software:** Unreal Engine, Unity, Photoshop, Premiere, Illustrator, Tableau

## PROJECTS

### “On Off the Air:” an Audio-Visual Exploration of the TV Show

Mar 2023 - Jun 2023

- Created a real-time audio-visual distortion method to enhance accessibility of streamed videos for deaf individuals
- Extracted ML classification data and employed PCA to identify meaningful associations between audio-video frames
- Utilized stacked and flattened frames to generate barcodes, enabling K-means clustering and color prevalence analysis

### Lyric-Based Source Separation

Sep 2022 - May 2023

- Modified Kaldi speech tools to facilitate batch extraction of posteriorgrams and lyrical alignments from mixed music
- Constructed an innovative PyTorch model using posteriorgrams, alignments, and spectral data for RNN processing

### Music Library Remixer

July 2022 - Dec 2022

- Developed a program to decompose each song in a music library into organized sets of different stems
- Automated the creation of new songs by layering random stems after matching their pitch, tempo, and onset positions

### Music Library Database and Web Interface

Jan 2023 - May 2023

- Constructed a PostgreSQL DB to store music library data, allowing concurrent use by DJs, producers, and music fans
- Designed a user-friendly Flask website enabling intuitive access to advanced music queries through simple commands

## EXTRACURRICULARS

### President and Audio Engineer at CU Records

Jan 2017 - May 2020

- Managed Columbia’s only accessible record studio, training hundreds of students in audio engineering and production
- Recorded and mixed audio projects for students, and organized a variety of free concerts, mixtapes, and music videos

### Radio Host for WBAR and WKCR

Jan 2017 – May 2019

- Curated and hosted for historic hip hop radio show Offbeat and my own radio show exploring the history of jazz rap

**Other:** Music producer, Games for Change volunteer, Iranian Students Association president, resident advisor

## PROFESSIONAL EXPERIENCE

### Columbia Microbiome Core

New York, NY

*Research Technician*

Sep 2020 – Sep 2021

- Designed sequencing projects, conducted computational analyses, and prepared reports for diverse client researchers
- Identified novel traits in the outbreak of Staph spread by needles in NYC, improving infection treatment for clinicians

### Hospital for Special Surgery

New York, NY

*Columbia Navab Fellow*

May 2019 – Jul 2019

- Automated the counting and analysis of osteoclasts from images of bone cell cultures using classical vision techniques
- Conducted automated analyses of mice models, uncovering a novel link between purine metabolism and osteoporosis