

EDUCATION

New York University

New York, NY

M.M., Music Technology, 3.66 GPA

Jan 2019

- *Academic Internship*: Teaching Assistant (Digital Signal Theory), MATLAB Instructor
- *Membership*: MARL Immersive Audio Group led by Dr. Agnieszka Roginska
- *Specialization*: 3D Audio; Digital Signal Processing; Audio Codec; Acoustics; Audio Programming
- *Thesis*: Subjective Evaluation of Stereo-to-9.1 Up-mixing Algorithms Simulating Additional Virtual Sound Sources
- *Thesis Advisor*: Dr. Agnieszka Roginska

Berklee College of Music

Boston, MA

B.M., Contemporary Writing & Production, 3.94 GPA

May 2016

- *Honors*: Summa Cum Laude, Asia Tour Scholarship, Berklee Achievement Grants
- *Specialization*: Music Production; Acoustics; DAW Writing; Recording; Mixing; Writing for Big Band and Orchestra

WORK EXPERIENCE

James L. Dolan Recording Studio

New York, NY

Recording Engineer

Sep 2017 – Dec 2017

- Ran recording sessions for renowned musicians, including but not limited to, John Schofield, Inge Ginsberg, and Noah Kellman
- Set up microphone arrays and patch bay before recording sessions
- Operated Pro Tools during recording sessions and discussed outcome with musicians and producers
- Cooperated with MARL Immersive Audio Group to conduct 3D audio recordings such as Ambisonics, ORTF-3D, and ESMA for VR contents

Freelancer

New York, NY

Production Music Writer / Musician

Sep 2012 – Present

- Compose music for television commercials for such clients as Samsung, United Airline, Toyota, and BBC
- Arrange and record original sound tracks for TV shows
- Perform as piano accompanist
- Lead Sungsoo Kim Jazz Quintet, Batista Trio, and Batista Ops Jazz Quintet, and hold multiple performances

RESEARCH EXPERIENCE

Stationary Music for VR

May 2018 – Present

- Review Vector-based Amplitude Panning (VBAP), Distance-based Amplitude Panning (DBAP), Virtual Hemispherical Amplitude Panning (VHAP) techniques to anchor background music to users' viewpoint in VR
- Build Max patch that implements up-mixing process and receives head tracking data from Unity to calculate gain factors and azimuth angles of each virtual sound sources in real-time
- Build Max patch that calculates distances between listener and each loudspeaker to configure delay and energy compensation
- Build graphical user interface (GUI) that enables users to visually check virtual sound sources' movement interacting with head tracker in 8.1 loudspeaker configuration
- Design experiment to evaluate perceptual impact of user-interactive VR audio reproduction system on user experience
- Published process as first author and presented at 145th Audio Engineering Society convention in New York

Evaluation of Additional Virtual Sound Sources in 9.1 Loudspeaker Configuration

May 2018 – Aug 2018

- Built Max patch that simulates virtual loudspeakers utilizing Vector-based Amplitude Panning (VBAP) in 9.1 layout
- Conducted subjective tests to evaluate spatial attributes such as envelopment, sound image width, and timbral quality
- Performed one-way ANOVA test to analyze data in MATLAB
- Published results as first author and presented at 145th Audio Engineering Society convention in New York

HoloDeck Distributed Concert

Mar 2018 – Apr 2018

- Cooperated with NYU Immersive Audio Group and Future Reality Lab to experiment distributed musical connections in mixed reality setting where musicians and dancers are virtually connected from different locations
- Operated OptiTrack Motion Tracking technology to render and stream in real time dancers' avatars to live stage performers

Stereo-to-5.1/9.1/13.1 Real-Time Converter

Nov 2017 – Aug 2018

- Built real-time up-mixer that offer three different up-mixing algorithms (Passive Surround Decoding, Least Mean Square & Adaptive Panning) and EQ preset, so that users can select preferred algorithm and optimize the sound both in Max/MSP and C
- Reviewed and implemented Perceptual Band Allocation (PBA) method to 5.1 surround sound to produce height channels
- Conducted subjective test to evaluate up-mixing algorithms in terms of spatial attributes such as envelopment, sound image width, and timbral quality
- Conducted one-way ANOVA test to analyze data in MATLAB
- Published results as first author and served as lead presenter at 145th Audio Engineering Society convention in New York

HRTF Measurement

Sep 2017 – Dec 2017

- Configured BACCH binaural microphone and ScanIR in MATLAB to measure personal HRTFs

Design and Implementation of an Interactive Mixing Environment for VR

Sep 2017 – Dec 2017

- Built virtual mixing environment where users can view 360-degree video through VR gear and edit individual instrument
- Designed virtual mixing panel in which volume, EQ (HPF, LPF), and reverberation are adjustable for each sound source

The Influence of Immersive Sound on Listeners' Perceptions of Old Films

Jan 2017 – May 2017

- Investigated on whether addition of horizontal and height channels enhances listeners' perception on envelopment
- Conducted subjective test to compare different reproduction methods (Stereo, 5.1, 7.1, and 9.1)
- Conducted one-way ANOVA test to analyze data in SPSS

PUBLICATIONS

- **Kim, S., Sridhar, S.** (2019) "Multichannel Audio Implementation for Virtual reality", Proceedings of the 2019 AES International Conference on Immersive and Interactive audio, York, UK March 27-29
- **Kim, S.** (2018) "Subjective Evaluation of Stereo-9.1 Upmixing Algorithms Using Perceptual Band Allocation", Proceedings of the 145th Audio Engineering Society Convention, New York, NY October 1-20
- **Kim, S., Sridhar, S.** (2018) "Evaluation of Additional Virtual Sound Sources in a 9.1 Loudspeaker Configuration", Proceedings of the 145th Audio Engineering Society Convention, New York, NY October 17-20
- **Kim, S., Sridhar, S.** (2018) "Stationary Music from Users' Viewpoint in VR Applications", Proceedings of the 145th Audio Engineering Society Convention, New York, NY October 17-20

VOLUNTEER EXPERIENCE

Monthly Music Hackathon NYC

Feb 2018

- Worked as a mentor and workshop helper for science data jam
- Conducted event coordination

Audio Engineering Society

Oct 2017

- Performed event operation at 143rd Audio Engineering Society convention
- Set up presentation and ensured equipment quality

SKILLS

- *Programming Languages:* MATLAB, C/C++, C#, Max/MSP, Unity
- *DAWs:* Pro Tools, Logic Pro, Reaper
- *Languages:* English (Advanced), Korean (Native)