Gabriel Zalles

Audio technology master

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Education

BA, *UC San Diego*, La Jolla, *Bachelors*.   **2012–2016**
Interdisciplinary Computing in the Arts Major

MA, *NYU*, New York, *Masters*.   **2016–current**
Music Technology

Master thesis

Title: *Design of a highly coincident microphone array for stereo and surround sound.*

Supervisors: Agnieszka Roginska

Description: Evaluating the effects of increased capsule coincidence in FOA recordings by using state-of-the-art MEMS capsules. A subjective assessment of a first order ambisonic array with extreme capsule coincidence was conducted. The experiment sought to determine if improvements towards spatial aliasing can outweight the SNR deficits of MEMS systems in FOA arrays.

Experience

Vocational

Research Assistant, *NYU*, New York City, New York.   **2017–current**
Currently working as a research assistant under the guidance of Agnieszka Roginska at NYU conducting several experiments in her area of expertise: immersive audio. As a research assistant I have had the privilege of assisting her with a THX collaboration which evaluated binaural renderers used for spatial audio reproduction.

DSP tutor, *NYU*, New York City, New York.   **2017–current**
I am also currently a tutor for incoming graduate students taking DSP for the first time. As a tutor I am required to help students with the programming environment MATLAB as well as help them understand the core concepts behind digital signal processing.

Publications

Papers

Audio Engineering Society, *NYU*, A Low-Cost, High-Quality **2017**
MEMS Ambisonic Microphone.
This paper presents a low-cost, high-quality first-order ambisonics (FOA) microphone based on low-noise micro-electronic mechanical systems (MEMS). This paper details the design, fabrication, and testing of a MEMS FOA microphone including its frequency and directivity response. To facilitate high resolution directivity response measurements a low-cost, automatic rotating microphone mount using an Arduino was designed. The automatic control of this platform was integrated into an in-house acoustic measurement library built in MATLAB allowing the user to generate polar plots at resolutions down to $1.8°$. Subjective assessments compared the FOA mic prototype to commercially available FOA solutions at higher price points.

Audio Engineering Society, *NYU*, Evaluation of Binaural Ren- **2017**
derers: A Methodology.
In this paper a methodology for the comparative evaluation of different binaural renderers is presented. The methodological approach is threefold. A subjective evaluation of 1) quantitative characteristics (such as front/back and up/down discrimination, localization) ; 2) qualitative characteristics (such as timbre, naturalness); and 3) overall preference. The main objective of the methodology is to help to elucidate the most meaningful factors for the performance of binaural renderers and to provide indications on possible improvements in the rendering process.

Languages

Spanish: Native
English: Fluent
French: Elementary proficiency

CS

Expert: MATLAB, HTML, CSS
Fluent: Pure Data, MAX, Unix, Git
Familiar: C++, JS

Interests

Tennis: I have been playing tennis for over 10 years, I like to play both single and doubles. My favorite professional player is Juan Martin del Potro from Argentina.
Books: I like to read in my spare time. My favorite genre of book is science-fiction. I also enjoy psychology books such as those by Dan Ariely.
Music: When I am not listening to music I like to play guitar and make music using my computer. I also enjoy experimenting with algorithmic composition and learning covers from my favorite bands.

References

- Agnieszka Roginska
- Tae Hong Park
- Schuyler Quackenbush

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- tae.hong.park@nyu.edu
- srq@audioresearchlabs.com

Cover Letter

To whom it may concern,

I write this letter today with the hope that you will find it an adequate addition to my *curriculum vitae*. I am a graduate student at New York University studying music technology and specializing in the field of immersive audio, which entails applying psycho-acoustic principles of sound in virtual reality experiences in order to create realistic audio scenes.

I completed my bachelors at University of California San Diego where I graduated with a degree in Interdisciplinary Computing in the Arts with a concentration in music. As a student at UCSD I was involved with a number of different organizations related to my field of study including: Associated Students Concerts and Events, an organization dedicated to organizing and curating music concerts and festivals for students on campus; The Deejay and Vinylphiles Club, a group which supports the musical arts and proliferation of electronic music at UCSD; and the KSDT Radio Station, a university radio station which gave me my very own show. Vocationally I also had the honor of working as an Audio Visual Technical Assistant for a year at UCSD, which taught me about live mixing and lighting principles.

Over the last year and a half I have been focusing primarily on finishing my masters degree and am currently in the process of writing my final thesis. I am concurrently working as a research assistant and tutor which is both challenging and rewarding. At NYU I forced myself to take considerably more technically advanced classes in order to acquire more skills I believe the job market is looking for. Specifically, I targeted my efforts towards programming, electronics, and acoustics courses.

For my thesis I have had the privilege and benefit of being able to work on a project which is near and dear to my heart and which has given me the chance to learn many new skills and principles I was unaware of previously. Namely, I was given the opportunity to work in a state-of-the-art Makerspace at NYU making using of 3D printers, CNC machines, laser cutters and many other tools to develop my own MEMS operated ambisonic microphone.

My first published paper was also entered as a candidate for the student design competition at AES 143 and awarded the Bronze price. Using the same project, our team later applied to and entered a start-up competition at NYU which rewarded us with a grant from the Center for Innovation and Entrepreneurship. During the competition we conducted customer interviews to determine the viability of the MEMS FOA system as a commercial product. We are still working on this project which is also the

subject of my thesis.

I hope that this letter has provided you with greater insight into my life and work. I am confident that I can offer you the problem-solving, managerial or executive skills you are seeking. Feel free to call or email to arrange an interview. Thank you for your time. I look forward to learning more about this opportunity.

Yours faithfully,

Gabriel Zalles