

Jorge Alejandro Zúñiga Bejarano

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Research Interests

Audio Signal Processing, Sound Synthesis, Machine Learning-based Modelling of Musical Instruments and Audio Effects, Cognitive Approaches to Sound Reproduction and Audio Systems, and Procedural Audio Synthesis.

EDUCATION

Queen Mary University of London

Masters of Engineering

London, UK

Sep 2015 - Jun 2019

Electronics with Music and Audio Systems

- Research project: *Procedural sound synthesis of bird song using particle swarm optimisation*" which resulted in a paper publication and presentation at AES 147 (New York, 2019).
- Awarded Third-Year Academic Achievement Prize and First place, Design and Build Hackathon 2017.
- Focused on DSP, acoustics, embedded systems, and ML for audio.

Queen Mary University of London

Science and Engineering Foundation Programme

London, UK

Sep 2014 - Jun 2015

- Introduced to English academic culture and university-level engineering coursework.
- Awarded Queen Mary International Science and Engineering Excellence Award for outstanding academic attainment.

PROFESSIONAL EXPERIENCE

YAMAHA CORPORATION

DSP Software Engineer

Hamamatsu, Japan

Jan 2021 – Present

- Previously joined Yamaha as a DSP R&D Intern (2020), contributing to early-stage research prototypes that led to my full-time role.
- Researched and implemented DSP algorithms for professional audio mixing consoles and released Interphase and DynamicEQ6 effects for RIVAGE PM series products. Leveraging technical knowledge in C/C++ and embedded DSP. More details about my contributions can be found on my webpage
- Performed real-time DSP optimization under severe hardware constraints which achieved a 94.8% reduction reduced DSP load by implementing assembly-level optimizations.
- Collaborated on cross-division R&D for audio processing and product integration.
- Conducted experiments and performance evaluations, contributing to internal R&D documentation and prototype systems.
- Applied bilingual communication (English/Japanese, JLPT N4) in collaborative research and development.

AI MUSIC

R&D Intern

London, UK

Jun 2018 – Sep 2018

- Using state of the art Digital Signal Processing and Music Information Retrieval techniques to create intelligent audio tools.
- Contributed to ML-based adaptive music systems. Python, C++.

PUBLICATIONS AND PRESENTATIONS

Audio Engineering Society

Oct 2019

- Zúñiga, Jorge; Reiss, Joshua D; Realistic Procedural Sound Synthesis of Bird Song Using Particle Swarm Optimization ; Queen Mary University of London, London, UK; Paper 555; 2019 Available: [AES Library](#)

Conference Presentation

- Presented the above paper and accompanying Engineering Brief at the AES 147 Convention, Javits Center, New York, October 2019.

ADDITIONAL

Selected Personal Projects: Such as analog and digital guitar fx pedals and a drum sequencer can be found on my [web page](#).

Technical Skills: C/C++, Python; experience with C#, Javascript, HTML/CSS.

Languages: Spanish (native), English (academic/professional fluency), Japanese (JLPT N4 certified)