Santiago Hoyos

Audio Software & DSP Engineer

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PROFILE

Audio software engineer with a research foundation in spatial audio and DSP. MSc dissertation in collaboration with Sony Interactive Entertainment proposing novel acoustic-scattering measurement methods for immersive virtual environments. Co-author of peer-reviewed research on accessible audio interaction (HCSE 2024, Springer LNCS). Comfortable across MATLAB, Python and C++/JUCE, with hands-on experience in measurement, simulation, and audio-ML workflows.

SKILLS

- **C++ / JUCE:** Audio plugin development through academic projects and self-directed study
- **DSP & Audio Programming (7+ yrs):** Filter design, signal-chain architecture, real-time audio fundamentals, mixing & mastering
- **MATLAB (7+ yrs):** Acoustic simulation, signal processing, measurement analysis, custom toolboxes
- **Python (4+ yrs):** Signal processing, data analysis, audio ML workflows
- **Spatial Audio (3+ yrs):** Binaural processing, acoustic modelling, immersive audio simulation, virtual environments
- **Swift (1+ yr):** iOS application development (shipped internal workflow tool at Devialet)
- **Game-audio engines (project-level):** Wwise, Unity, Unreal — academic and personal projects
- **Acoustic measurement:** Impulse-response capture, room-acoustics analysis, scattering measurement

RESEARCH & SELECTED PROJECTS

Mobile Game Accessibility – Co-author, peer-reviewed paper *2024*
Cardiff University – HCSE 2024, Springer LNCS

Co-developed binaural soundscape frameworks for mobile games targeting users with dual visual and dexterity impairments. Designed accessible audio-interaction guidelines and contributed sound-production work for the prototype. Published at the 10th IFIP HCSE Conference, Reykjavik, 2024 (Springer LNCS Vol. 14793, pp. 255–263).

Acoustic Scattering for Virtual Applications – MSc dissertation *2023*
Sony Interactive Entertainment / University of York

Built a MATLAB-based simulation pipeline for acoustic scattering in virtual audio environments. Proposed two methodological contributions: a phase-locking measurement technique to reduce measurement noise, and Multi-Angle Scattering Analysis (MASA) to improve angular spatial accuracy in scattering characterisation. Supervised by Prof Gavin Kearney; collaborator at Sony Interactive Entertainment.

Metamaterials for Acoustic Absorption – BEng thesis *2021*
Universidad San Buenaventura

Simulated acoustic-absorption behaviour using impedance-based modelling. Proposed an optimisation methodology that improved absorber-performance prediction accuracy.

WORK EXPERIENCE

Audio-Visual Systems Designer *2024 – Ongoing*
Perfect Integration – London, UK

Design and commission integrated audio systems for high-end residential environments (Wisdom Audio tier; 10+ projects, 10+ rooms per project, 18+ channel deployments). Produce signal-flow schematics, equipment layouts, and coordination drawings; manage calibration workflows across distributed audio.

Technical Audio Advisor (Sales) *2024*
Devialet at Harrods – London, UK

Customer-facing role at the flagship Devialet store, demonstrating premium audio systems and advising on listening-environment fit. Initiated and built an internal iOS (Swift) application that streamlined inventory tracking for the store team and was adopted into daily workflow.

Acoustic Consultant *2021 – 2022*
GSA SAS – Medellín, Colombia

Delivered 20+ acoustic-modelling and environmental-noise assessment projects (20+ technical reports) supporting architectural design decisions. Produced CAD-based regulatory-compliance documentation and advised on material-selection strategies for commercial and residential environments.

Audio Systems & Production Engineer (Freelance) *2017 – Ongoing*
Remote and mixed locations

Mixing, mastering, and signal-chain design for music, radio, and digital media. Room-acoustic consultancy and acoustic measurement for studio and listening environments.

EDUCATION

MSc – Audio & Music Technology *2022 – 2023*
University of York, York, UK

Dissertation: *Acoustic Scattering Measurement Techniques for Immersive Virtual Environments* — supervised by Prof Gavin Kearney & Dr Frank Stevens, in collaboration with Sony Interactive Entertainment.

BEng – Sound Engineering (5-year integrated programme) *2016 – 2021*
Universidad San Buenaventura, Medellín, Colombia

ACHIEVEMENTS & CERTIFICATIONS

Publication
Abdoulqadir, Loizides & Hoyos (2024). *Enhancing Mobile Game Accessibility: Guidelines for Users with Visual & Dexterity Dual Impairments.* HCSE 2024 – Springer LNCS Vol. 14793, pp. 255–263.

Certifications

- Trinnov Certification, Level 1
- Dante Protocol, Levels 1 & 2
- Shure Wireless Workbench 6

Language: English – C1 / Professional working proficiency (TOEFL iBT 92/120).

REFERENCES

Prof. Andy Hunt – University of York, Chair, Engineering Teaching Committee. Contact info available upon request.
Dr. Frank Stevens – University of York, Associate Lecturer. Contact info available upon request.