

Aman Jagwani

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Education

- **PhD in Embedded/Interactive Audio, FPGAs, Audio DSP** - Maynooth University (2023-2027) - ongoing
- **MSc in Sound and Music Computing** - Maynooth University (2022-2023) - First Class Honors
- **BMus in Electronic Production and Design and Drum Set Performance** - Berklee College of Music (2016-2022) - Summa Cum Laude

Experience

- **Audio and FPGA Developer** - Music Technology Research Group, Maynooth University (**2022 - Present**)
 - Developed ModFPGA, a modular FPGA sound synthesis platform using C++ and High-Level Synthesis (HLS) for AMD Xilinx Zynq 7000 FPGA SoC ([GitHub Repository](#)).
 - Collaborated internationally with the Emeraude team (France) on FPGA-based audio processing research, particularly ultra-high sampling rate sound synthesis techniques.
- **Software Developer – Csound Development Team (2023 – Present)**
 - Developed and currently maintain a bare-metal implementation of Csound for embedded platforms, including Daisy, Teensy, STM32, Zybo, and ARM Cortex.
 - Currently developing an FPGA framework for hardware-software co-design directly from Csound files.
- **Interactive Audio Developer** – Chaal and Min Rukam Installations by Asim Waqif (**2023 – 2025**)
 - Programmed ESP32 microcontrollers for interactive audio involving digital audio synthesis, mechanical actuators (stepper motors, vibration motors, relays), and generative soundscapes triggered by sensors (LIDAR, SONAR, load cells, LDRs).
 - Developed Node.js (Fastify) server on Raspberry Pi, hosting a React web app for control, sensor data visualization, and audio sequence management.
 - Implemented adaptive system behaviors, environmental responses, and cross-device triggering.
 - Installations showcased at NMACC, Mumbai and IAB25, Jeddah.
 - Created a header-only toolkit based on the ESP32 interactive audio code ([GitHub Repository](#)).
- **Sound Designer and Audio Programmer** - Efection Experience (**2023 - Present**)
 - Created a custom immersive, generative, interactive sound experience using Csound for a multi-sensory bio-feedback installation.
- **Music Producer, Composer, Performer, Sound Designer** - Freelance (**2018 - Present**)
 - Developed a suite of custom audio plug-ins for sound design and performance.
 - Produced music across genres like Jazz, Electronic, Neo-Soul, RnB, Pop.
 - Performed internationally, focusing on live electro-acoustic interaction using custom software.
- **Researcher** – Boulanger Labs (**2021 – 2022**)
 - Developed interactive audio experiences and VR projects in Unity using Csound, emphasizing real-time generative audio integration.
- **Lecturer** - Maynooth University (**2023 - Present**)
 - Teaching courses in Interactive Systems, Human-computer interaction, Audio Programming, Generative Audio, and Embedded Systems.

Skills

- **Programming:** C/C++, HLS/FPGA, Typescript, Node.js, Fastify, React, Python
- **Audio:** Embedded Audio, Generative Music, Spatial Audio, Csound, Max/MSP, Pure Data, Supercollider
- **Music/Production:** Ableton Live, Logic Pro, Pro Tools, Mixing
- **Other Skills:** Drum-set, Percussion, Composition, Production

Awards

- Armand Zildjian Percussion Endowed Scholarship (2019)
- Brian Eno Production Award (2022)
- Maynooth University Taught Masters Scholarship (2022)
- John and Pat Hume PhD Scholarship (2023)

Publications

- *"Creative Possibilities and Customizability of Live Performance Systems with Open Source Programming Platforms" – UbiMus 2023*
- *"Interactive Audio Toolkit: Creating Sonic Experiences with Low-cost, Low-power Microcontrollers" - UbiMus 2024*
- *"Bare-metal Csound" - ICSC 2024*
- *"Developing a Modular Sound Synthesis Platform for FPGAs with High-Level Synthesis Programming Techniques" – ADCx India*