Mitchell McDermott

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EDUCATION

Masters of Science in Sound & Music Computing | Queen Mary University of London | London, UK | 2023 | Distinction
Thesis: "Unheard Potential: Exploring Haptic-Auditory Feedback in Joint Action Tasks"

Bachelors of Music in Electronic Production & Design | Berklee College of Music | Boston, MA | 2021 | Magna Cum Laude
Thesis: "Morphology Pro: A Four Way Spectral Sample Morphing Audio Plugin"

EXPERIENCE

Guest Researcher | Human Robotics Group, Imperial College London | London, UK | February 2023 - August 2023
• Led research on haptic-auditory feedback in joint action tasks, using MATLAB, Simulink, Pure Data, and Python for experimental design and data analysis. • Led experimental studies using robotic devices, demonstrating enhanced temporal synchronization in joint tasks with binaurally presented auditory cues.
• Collaborated effectively in a multidisciplinary team, coordinating efforts to explore practical applications in collaborative systems and stroke rehabilitation.

Design Apprentice | Queen Mary University of London | London, UK | March 2023 - April 2023
• Assisted in the development of an accessible digital musical instrument, contributing to key design enhancements under the guidance of a PhD candidate.
• Utilized advanced techniques in laser cutting and woodworking, coupled with precision in assembling electronics, to craft high-quality components.
• Collaborated with the lead designer, gaining insights into professional design processes, effectively addressing technical challenges through creative solutions.

Software Developer | Sonik Architects | Remote | February 2022 - December 2022
• Collaborated closely with electronic music pioneer BT on a cutting-edge initiative to develop a generative audio system tailored for blockchain integration.
• Engaged in comprehensive system design, focusing on scalability and performance.
• Played a pivotal role in designing and building software instruments and effects using TypeScript and Tone.js.

R&D Engineer | Boulanger Labs | Boston, MA | September 2021 - December 2021
• Assisted in the integration of real-time reactive sound synthesis engines in immersive VR environments using Csound in Unity.
• Developed advanced, malleable Csound instruments and processing units, optimized for real-time manipulation and control within VR settings.
• Engaged in collaborative sound design efforts, working closely with a multidisciplinary team to create cohesive and engaging VR auditory experiences.

Creative Director and System Developer | MIT Media Lab | Boston, MA | September 2021 - December 2021
• Designed an audio processing system utilizing electromagnetic manipulation of ferrofluid for dynamic sound control.
• Pioneered a real-time system for gestural control of spatial sound, utilizing a networked system for live immersive audio streaming to personal devices.
• Demonstrated multifaceted leadership, balancing creative direction, technical development, and team coordination, enhancing skills in project management, system engineering, and interdisciplinary collaboration.

PROJECTS

Spectral Morphing Pedal
• Developed a cutting-edge guitar pedal prototype designed to blend the guitar's signal with pre-loaded sample loops seamlessly.
• Integrated DSP algorithms for monophonic pitch tracking, envelope following, spectral morphing, and compression.
• Utilized C++ and Csound for efficient implementation and demonstrated expertise in embedded system design.

MARBL: A Physical Rotating Sequencer
• Engineered a novel digital musical instrument design, featuring a rotating platform equipped with pressure sensors, LEDs, and a gyroscope.
• Employed C++, Max/MSP, and Arduino to develop an intuitive user interface.
• Applied skills in instrument design, interactive system design, and UI/UX design, showcasing an ability to create user-centric, interactive musical experiences.

COURSEWORK

Music and Audio Programming | C++, Digital Signal Processing, Embedded Systems | 2023
Implemented a digital emulation of the classic Moog Voltage Controlled Filter in C++ using the Bela embedded audio processor.

Deep Learning for Audio and Music | Pytorch, Python, DNN Training & Engineering | 2023
Designed and trained DNN for source separation and classification of dysarthric speech audio samples.

SKILLS

Programming: C/C++, Git, Java, JavaScript, MATLAB, Max/MSP, Node.js, Processing, Python, PyTorch, Three.js, Tone.js, TypeScript

Music Production: Arranging, Composition, Production, Sample Library Creation, Songwriting, Sound Design, Synth Programming

Soft Skills: Creative Thinking, Intellectually Curious, Problem Solving, Collaboration Skills, Sense of Humor

Ethos: Democratize Creativity, Design Accessibly, Develop Bizarre, Craft Extraordinary Interactive Musical Experiences