Sourav Pande

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WORK EXPERIENCE

Virtual Experiences Simulation Lab   **Miami, FL**
XR Software Engineer   *May 2023 - Present*
- Developed and integrated VR features for "Mangrove City," an educational VR experience about mangrove forests, using Unity and C#, and enhanced performance for VR (Quest 2) deployment by optimizing draw calls, reducing them from 2000 to 500, and minimizing triangle count from 20 million to 1 million.
- Guiding and mentoring junior developers as a senior developer, contributing to their professional development while ensuring project success across various initiatives.
- Authored detailed spec sheets for upcoming XR projects, providing clear direction for development teams and ensuring timely achievement of project goals within budgetary constraints.

University Of Miami   **Miami, FL**
Graduate Teaching Assistant - Digital Signal Processing   *Aug 2023 - Present*
- Facilitated hands-on learning experiences for students during lab sessions, resulting in an increase in understanding of theoretical concepts and practical applications.
- Supported the development of new audio signal processing projects by providing mentorship to students, empowering students to implement DSP techniques for audio effect design.

Frost School Of Music   **Miami, FL**
Live Sound and Recording Engineer   *Aug 2022 - May 2023*
- Collaborated with musicians and ensembles to implement customized front of house mixes reflecting each artist's style, while also overseeing sound reinforcement and managing audio production for over 50 live events.

InventOnUs Tech   **Pune, MH**
Software Engineering Intern   *July 2021 - Jan 2022*
- Researched and implemented cutting-edge optimization algorithms tailored to test case generation using Python, resulting in a 20% increase in efficiency.
- Analyzed data and results to fine-tune algorithm parameters, leading to a 15% improvement in overall algorithm effectiveness.

PROJECT EXPERIENCE

Deep Learning Based Auditory Zooming
- Designed and implemented an audio visual zooming system using pytorch to selectively zoom in on specific sound sources while attenuating interferences.
- Conducted comprehensive testing and evaluation of the system's performance using objective metrics such as Short-Time Objective Intelligibility (STOI) and Perceptual Evaluation of Speech Quality (PESQ), demonstrating its efficacy in improving speech clarity and quality across varying interference levels.

Spatial Maps
- Engineered an innovative navigation solution utilizing Head-Related Transfer Functions (HRTFs) to deliver precise audio instructions with spatial cues, improving user orientation and navigation efficiency.
- Integrated spatial audio prompts for navigating turns, aiding users who struggle with direction discernment and assisting individuals with visual impairments in confidently navigating their surroundings.

BeamMax
- Developed a real-time beamforming application that spatially filters sound sources in environments with multiple competing audio sources. Enhancing signal-to-noise ratio, resulting in more intelligible audio recordings.

Audio DSP Plugins
- Developed DAW-compatible and standalone Audio Plugins, including Delay, Equalizer, Comb Filter, Synthesizer, and Sampler, initially prototyped in MATLAB and subsequently built using C++ and JUCE.

Dataset Simulation
- Utilized Pyroom Acoustics, a Python package, to overcome constraints in acquiring acoustic data for machine learning applications.
- Generated synthetic room impulse responses (RIRs) accurately simulating diverse room sizes, acoustic properties, and microphone/speaker configurations.

Acoustic Analysis
- Conducted an in-depth acoustic analysis of a room, focusing on optimizing sound quality. Identifying acoustic issues such as reverberation, reflections, and resonance, and proposed strategic solutions for effective treatment.
- Provided recommendations for speaker placements and listening positions to ensure optimal sound reproduction and immersive audio experiences within the treated space.

EDUCATION

University of Miami   **Miami, FL**
Master of Science in Music Engineering Technology | GPA - 3.83   *May 2024*
- Coursework: Digital Signal Processing, Statistical Signal Processing, Acoustics, Computational Psychoacoustics, Transducer Theory.

Savitribai Phule Pune University   **Pune, MH**
Bachelor of Technology in Computer Engineering | GPA 3.84   *May 2022*
- Coursework: Data Structures and Algorithms, Object Oriented Programming, Operating Systems, Digital and Analog Electronics, Machine Learning.

TECHNICAL SKILLS

Languages | Frameworks : C/C++, Matlab, Python, C# | JUCE, Pytorch, Librosa

Tools | Audio Workstations: Git, Unity, SPICE | FL-Studio, Max MSP, Ableton Live