



Bliss@Home, Peace@Work ...No Room for noise

*We were young, we tried cleaning up the world;
Now, wiser we wear shoes.*

In our ideal worlds, there's no place for noise pollution. In our real worlds we are far from it - home or office. There is jarring disturbing noise all around - no place for peace & quiet...

While we cannot speak for the world, we certainly can help create your personal silent space, blissful, peaceful.

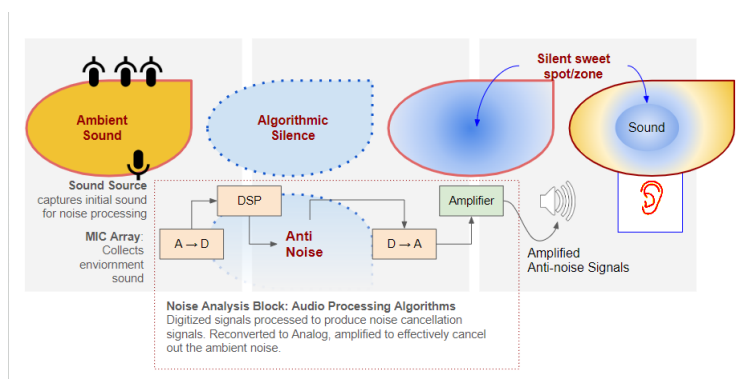
Crafting noise-free experiences,
- in meticulously designed soundscapes, engineered for pure sound -
with experience, expertise and innovation... is the Jasmin way.

Article by Engineering Support Team, Jasmin Silver

Hear only what you want... Feel it deeply embedded in silence!

Active noise control (ANC) may significantly reduce background noise within specified spaces; through a complex process of creating countering waves to that of the noise; in-real-time thereby canceling its propagation.

ANC systems deploy microphones to measure ambient noise of the room, to generate phase inverted noise-canceling waves. At the fundamental level it is a method for reducing unwanted [sound](#) by the addition of a second sound specifically designed to cancel the first.



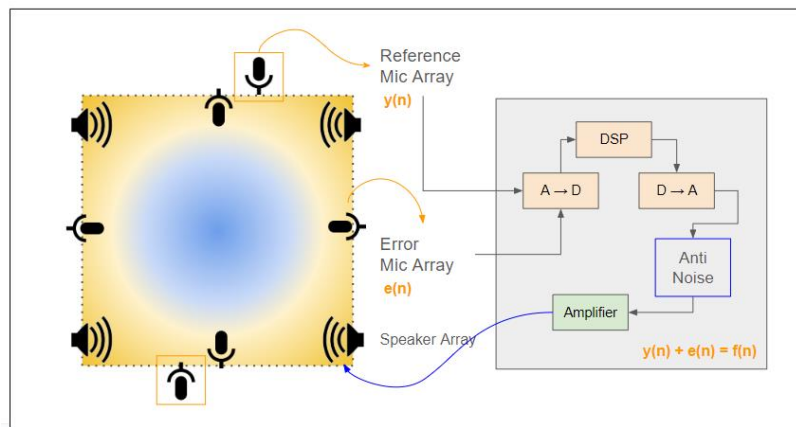


The Challenge

How to achieve absolute silence in a designated area, ensuring no ambient or internal noise disturbances, crucial for a noise-sensitive environment or recording?

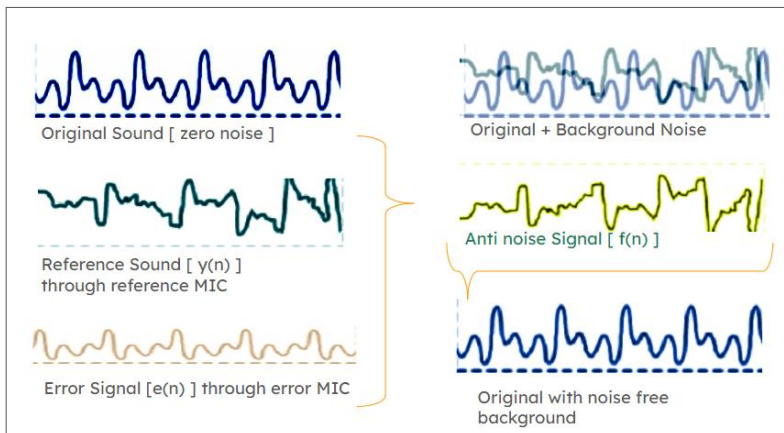
Adaptive ANC Framework

In a noise-free environment, sound is transmitted to a microphone array, digitally processed, and amplified for clear, pristine sound reproduction. This succinctly describes the flow from the sound source through the process of capturing, converting, processing, and amplifying the audio in a noise-free system.





Embracing Silence--The Evolution of 'No Room for Noise' Solution



A reference signal $x(n)$ is sensed by an input microphone close to the noise source before it passes a loudspeaker. The noise canceler uses the reference input signal to generate a signal $y(n)$ of equal amplitude but 180° out of phase. This Anti-noise signal is used to drive the loudspeaker to produce a canceling sound that attenuates the primary

acoustic noise in the room. The error microphone measures the error (or residual) signal $e(n)$, which is used to adapt the filter coefficients to minimize this error.

Jasmin has chosen to endorse the "No Room for Noise" concept, particularly emphasizing the incorporation of Adaptive ANC as the best solution. This innovative approach within Advanced ANC systems allows for dynamic adaptation to change noise environments. By continuously watching the ambient noise, Adaptive ANC adjusts the anti-phase sound signal, accordingly, making it exceptionally suitable for spaces where noise conditions often fluctuate. This alignment with Adaptive ANC reflects Jasmin's commitment to deliver top-tier audio experiences that ensure a consistent and immersive sound environment, dropping disruptive background noise for customers enjoying music, movies, or any audio content.

This choice resonates with Jasmin's dedication to meet customer preferences for seamless, high-quality sound experiences, whether in personal listening or within home entertainment systems.



Real-Time Applications and Benefits



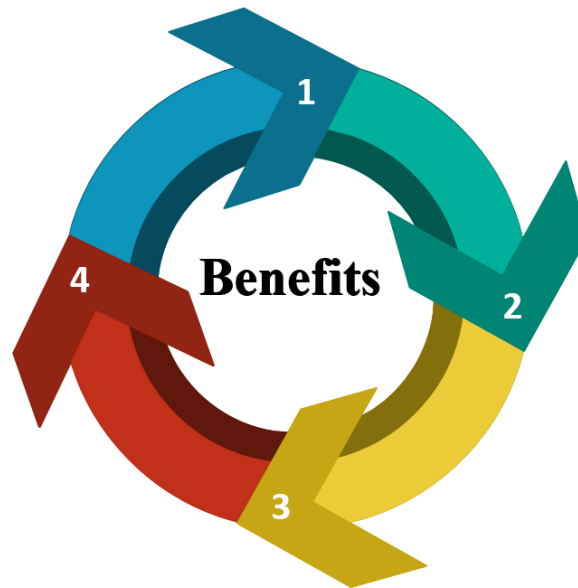
One of the examples of real-time applications of Active Noise Control (ANC) is creating a peaceful workspace in a busy mall. Imagine a small cubicle equipped with ANC technology, allowing people to work smoothly amidst the noise of the bustling mall. This not only boosts productivity but also addresses the challenge of working in noisy public spaces like movie theaters, and airports etc., making it easier for individuals to concentrate and work effectively.

Immersive Entertainment

Experience superior audio in music, movies, or gaming, free from external noise interference.

Uninterrupted Focus

Enhance focus with ANC, fostering a conducive environment for deep work.



Peaceful Environment

Block unwanted noise for a peaceful environment ideal for work, relaxation, or leisure.

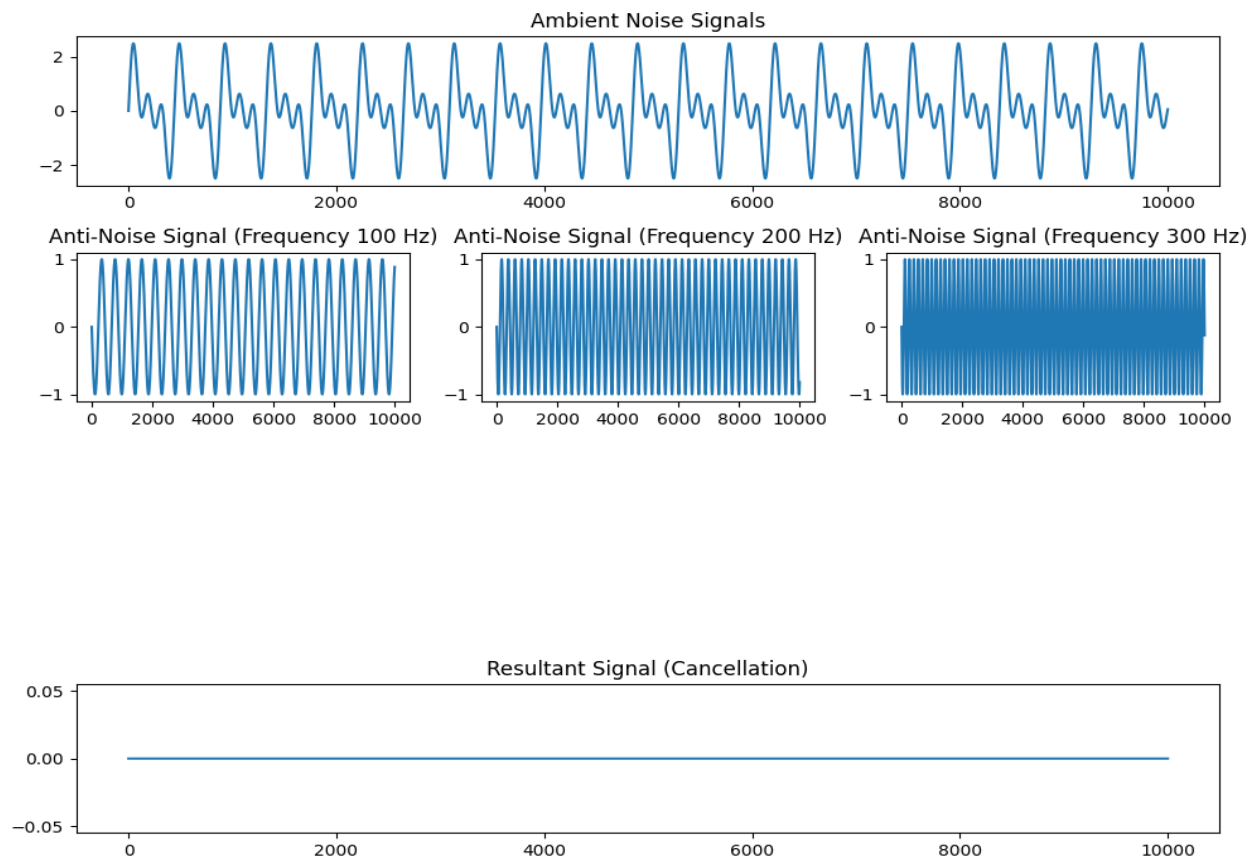
Crystal-Clear Communication

Achieve clear communication in calls and virtual meetings, minimizing ambient noise.



The Science behind, that silence (Simulated Results)

Simulated an Active Noise Control (ANC) system using ambient noise signals of multiple frequencies (Hz). It generates ambient noise, creates corresponding anti-noise signals, and applies them to cancel out the noise components. The resulting signal demonstrates the effectiveness of ANC. The plotted subplots visually represent the ambient noise, anti-noise signals, and the resultant signal after cancellation for the first ten thousand samples.



While we achieved 100% cancelled output in the simulated result, it is difficult to achieve 100% accuracy in a real-time Active Noise Control (ANC) system in a free-space environment. Not all real-time circumstances will be able to achieve total noise cancellation.



DISCLAIMER

Initially pioneered in Various industries, Adaptive ANC revolutionized in-car audio by reducing noise through sophisticated fault-finding systems. This innovation became a benchmark for intricate noise reduction within automotive contexts.

Jasmin Engineering Support Team aims to introduce and implement Adaptive ANC technology in non-automotive spaces, which holds the promise of creating tranquil, noise-free environments for enhanced productivity, focus, and well-being in various applications such as open offices, public spaces, and designated quiet areas.

Stay tuned for our next article where we will unveil a groundbreaking real-time Active Noise Control (ANC) system, uniquely engineered for free space, promising an unparalleled audio experience in open environments. Elevate your sound, stay engaged!

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