**Introduction to SeekAudio Noise Reduction**

SeekAudio features exceptional audio noise reduction capabilities. It is an AI-powered denoising model trained on vast amounts of audio data containing common natural noises. Not only can it eliminate typical steady noise, but it also effortlessly removes non-stationary noise that traditional denoising algorithms struggle with—even suppressing artificially generated noise.Additionally, SeekAudio can operate smoothly in real-time on even low-end mobile devices with extremely low CPU usage. What's more, it can further optimize computational demands to suit specific user requirements.

To accommodate diverse user needs, SeekAudio offers two model variants that balance noise reduction performance with computational requirements: model\_lite and model\_main.These two models are available as a cross-platform noise reduction library compatible with various platforms (Windows/Android/Linux/ios).The built-in noise suppression module in WebRTC (referred to as webrtcNS) is currently one of the best-performing noise reduction solutions available on the market for free. Therefore, in our detailed test reports, we primarily compare our results with webrtcNS as the benchmark.Through comprehensive comparative testing, we found the computational load of noise reduction using the model\_lite inference is approximately 2-3 times that of webrtcNS.Since webrtcNS accounts for only a minor portion of WebRTC's total audio processing thread workload (including capture, AGC, NS, AEC, etc.), even with model\_lite's 2-3x higher computational demand, it still easily achieves real-time processing on low-end mobile devices. Moreover, the cleaner noise-reduced output further enhances AEC processing effectiveness.The computational load of model\_main inference exceeds model\_lite by over 4x, while delivering superior noise suppression performance. Notably, it still maintains real-time processing capability on mid-range mobile devices.

This noise reduction library is not only ideal for VoIP audio/video communication scenarios, but also highly suitable for any application requiring speech enhancement. For instance, performing noise suppression prior to human-machine interaction significantly improves speech recognition accuracy as cleaner audio input yields more reliable results.

The SeekAudio library features a simple and user-friendly interface. A demo program demonstrating its usage is available at <https://github.com/seekaudio/seekAudioNS>

We will use a continuously updated online document to provide detailed documentation of SeekAudio's testing performance.The document address:

<https://docs.google.com/document/d/1znIeaMMoMPAwUqQQCHuxmWHcOxiIS7JIHjm6CobRrns/edit?usp=sharing>

SeekAudio is an AI model trained on vast amounts of noise data, allowing for on-demand customization—simply train it with specific noise types to generate tailored models.Here, we demonstrate SeekAudio's exceptional targeted noise reduction capabilities. As a seasoned audio engineer, you've likely encountered harsh squeak noises—caused by microphone handling inaccuracies, residual echo cancellation, or proximity feedback howls—all stemming from uncontrollable variables in real-world scenarios.

The audio sample PCM files and related test models are located in the squeak folder at <https://github.com/seekaudio/seekAudioNS>. You can use audio editing tools like Audacity, GoldWave, or others to listen to the samples. After applying noise reduction, the processed results can be observed as shown below.

