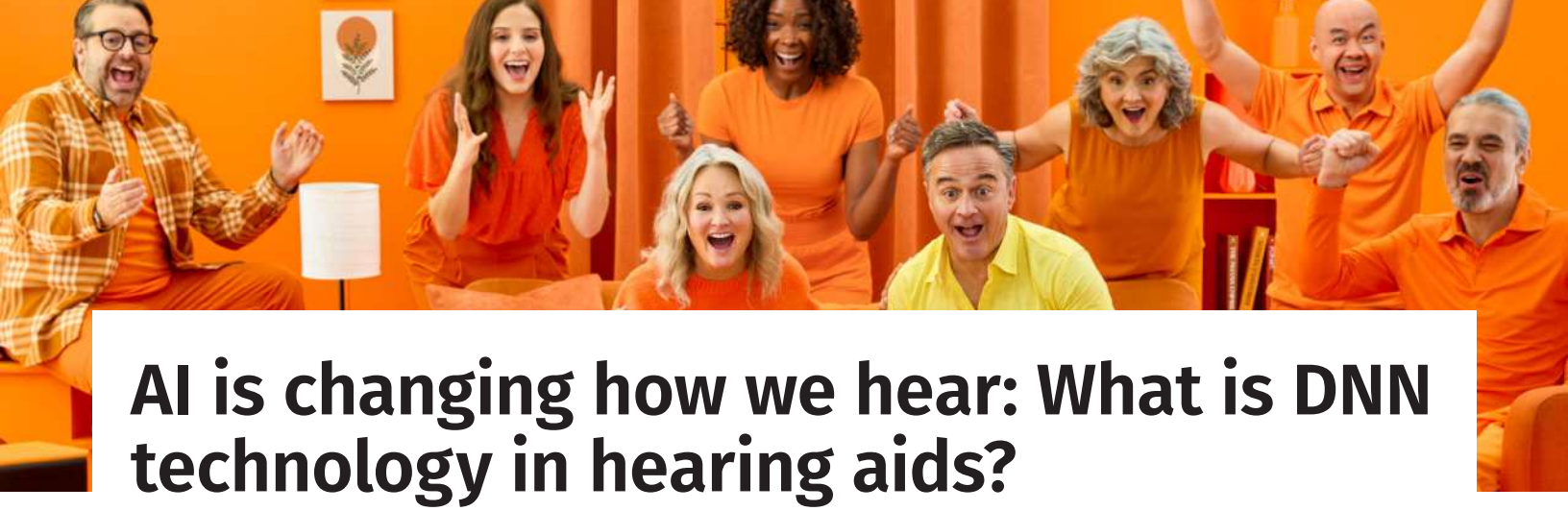

AI is changing how we hear: What is DNN technology in hearing aids?

Unitron
3 min read

Artificial intelligence is changing the way we live — from how we drive to how we communicate. Now, it's also changing how we hear.

In everyday situations like busy restaurants, family gatherings or watching a game from the sidelines, sound doesn't come one signal at a time. It overlaps, it shifts, and it competes for attention. When it comes to hearing aids, understanding speech clearly in these busy environments depends on how effectively that sound is processed.

That's where sophisticated AI technology comes in.

How AI is used in hearing aids

Many modern hearing aids with AI are capable of identifying speech and classifying listening environments like quiet spaces, speech in noise or live music. They can then make some adjustments in the background to things like directionality or noise reduction. These actions are based on a pre-set calculation built into the hearing aid system.

More advanced applications of AI go further by making adjustments to the signal as it enters the system.

At Sonova, we use Deep Neural Network (DNN) technology in our hearing aids. A DNN is one of the most advanced ways AI is used in hearing aids today.

Our DNN is trained on huge amounts of sound data, exposing the system to speech in both quiet and noisy environments. We need to provide the system with enough contextual information that it can make decisions in real time, especially when it comes across new listening situations. Through this training, it learns the patterns that make speech distinct — and how to handle competing sounds simultaneously, even when they're coming from multiple directions.

When in a complex, noisy listening environment, our DNN:

- **Identifies** speech within complex sound environments
- **Separates** it from competing noise
- **Maintains** clarity as voices shift in number or direction. This allows the hearing aid to adapt in real time, helping you follow conversations more easily in dynamic situations.

A different way to hear

Until now, our hearing aids have relied on binaural beamforming technology to hone in on speech in a particular direction, trying to exclude competing background noise. This approach works best when noise is well-spaced in relation to the listener, and where there is only one speaker.

Now, with Sonova's DNN, we can do better. Our hearing aids don't need to just focus on speech from one direction. The system identifies speech within the sound environment, separates it from the competing noise, and keeps it clear as conditions change. This supports conversations in settings where multiple speakers and sounds are present at once.

Because sound can come from many directions, this approach helps people stay connected to conversations as they move and shift.

Picture a kids' soccer game on a Saturday morning.

There's cheering from the sidelines, a whistle cutting through the air, and conversations happening all around — parents catching up, calling out to their kids, reacting to the play. The sound is constant and coming from every direction.

In this kind of environment, conversations can be hard to keep up with.

In the most challenging listening situations, our DNN sorts through noise as it happens — helping speech come through more clearly so conversations on the sidelines feel easier to follow.

It's a listening experience designed for the way real life actually sounds.

Introducing Moxi™ S-RX

Moxi S-RX from Unitron brings DNN hearing technology into everyday listening situations.

These rechargeable hearing aids are designed to handle dynamic environments by combining DNN sound processing with features that support flexibility and ease of use.

Key features include:

- Our Deep Neural Network (DNN) feature, SoundSonic360 – for real-time speech separation from noise
- Optional App Programs for personalisation in noisy environments
- Automatic environment classification and sound optimization through Integra OS
- Universal Bluetooth® connectivity for calls and media streaming
- Easy setup and in-the-moment adjustments through the Remote Plus app

Together, these features support a listening experience that adapts with you as you go about your day.

Common questions about AI in hearing aids

How does the DNN work in Unitron hearing aids?
DNN stands for Deep Neural Network. It's an advanced type of artificial intelligence that we have trained to recognise speech and distinguish it from background noise, even when speech is coming from different directions or from multiple speakers.

Do all hearing aids use AI technology?
Not all hearing aids use AI in the same way. Sonova is the first hearing aid manufacturer to use a DNN that is responsible for cleaning and delivering the output signal to the listener and is not just used at the beginning of the pathway where the signal is being classified.

Does a DNN remove all background noise?
Our DNN cleans up the signal and effectively manages background noise, so speech is easy to follow, while still maintaining awareness of the surrounding environment.

Can your DNN help with conversations involving multiple speakers?
Yes. Our DNN technology is designed to handle situations where several people are speaking at once, keeping speech clear as voices shift and overlap with surrounding noise.

This modern wave of artificial intelligence is bringing new capabilities to hearing technology. By utilising DNN technology, our hearing aids can take on multiple commands simultaneously, allowing for speech separation from noise in real time, even with multiple speakers.