

Cochlear Implants and Artificial Intelligence (AI)

Cochlear's innovation leadership began with Professor Graeme Clark's implantation of the world's first multi-channel cochlear implant in 1978, establishing a legacy that continues today.¹

AI in Action

Cochlear has been integrating AI-driven features into cochlear implant systems for many years. One of the most established examples of AI in Cochlear products is (SCAN) Scene Classifier Automatic Notification technology, which has been available in Cochlear sound processors for several years.²⁻⁴

SCAN represents automatic scene classification that uses AI algorithms to analyze the acoustic environment in real time, automatically categorizing listening situations such as speech in noise, quiet environments, music, or wind noise.⁵

Clinical evidence demonstrates the meaningful impact of this technology. A multicenter prospective study published in Cochlear Implants International in 2024 found that pediatric cochlear implant

users with SCAN achieved a significant 4.6 dB improvement in speech reception thresholds in noise compared to omnidirectional microphone settings, without any negative impact on real-life functional performance.⁶ These gains are substantial, representing approximately a 40% improvement in challenging listening environments.⁷⁻⁸

The benefit of the AI-driven feature is twofold; firstly, it has been shown to deliver clinically proven hearing improvements in challenging listening environments and secondly the AI-driven personalisation enhances real-time sound processing tailored to individual needs.^{4,8-9}



Jan Janssen,
Chief Technology Officer
at Cochlear.

“ At Cochlear, we see **artificial intelligence** as a powerful opportunity to enhance the hearing outcomes that matter most to people living with hearing loss. AI is already embedded in our products through technologies like **SCAN**, which automatically adjusts settings to deliver clearer sound in challenging environments, and we continue to invest in research that harnesses AI alongside machine learning and neuroscience to improve both patient outcomes and clinical care. Our commitment is unwavering: to use every tool at our disposal - including AI - to help people **hear and be heard**, connect with others, and live full lives, while always ensuring that clinicians remain at the center of patient care and that robust privacy protections safeguard sensitive patient data. ”



Revolutionising Hearing Through Smart Technology

In 2025 Cochlear introduced the first smart cochlear implant system featuring internal memory and upgradable firmware. The smart cochlear implant system incorporates onboard memory to help seamless programming updates and advanced diagnostics, compared to Cochlear's previous devices.¹⁰⁻¹¹

Cochlear is exploring AI-driven innovations to personalise sound processing and enhance the hearing experience for users. By adjusting sound processing and stimulation in real time based on individual hearing models, AI could adapt to the auditory environment to meet specific user needs. Collaborating with the Australian Hearing Hub and Google, Cochlear is exploring developing tools that predict listening intent and deliver automated sound adjustments. These improvements aim to provide a natural and more seamless hearing experience.

Through AI, we strengthen our commitment to patients and hearing health professionals that has defined Cochlear for over four decades.¹²



Supporting Clinicians, Enhancing Patient Care

Cochlear's future approach to AI prioritises our clinical partnership. Cochlear is exploring AI assisted tools that could streamline tasks, such as device fitting, diagnostics, and rehabilitation programming while ensuring clinicians retain full control over patient care decisions. By optimising workflows and reducing time spent on routine adjustments, in the future AI could support hearing health professionals to focus more on improving individual patient outcomes.

Cochlear views AI as a powerful tool to enhance human expertise in hearing care - not to replace it - supporting clinicians in delivering better care while helping recipients hear and be heard in the moments that matter most.



Investment in Research and Development

We are driven by a passion for progress – to help people hear and be heard. With over AUD\$3 billion invested in research and development throughout our history and a global team of more than 550 engineers working on over 100 active research programs, we are committed in research and development.¹² This commitment ensures we don't just respond to current hearing challenges but anticipate future needs.

Our innovation approach extends beyond internal R&D to include partnerships with leading research institutions, universities, and clinical centers worldwide. This collaborative approach ensures our passion for progress is informed by diverse perspectives, rigorous clinical validation, and deep understanding of recipient needs across different demographics, cultures, and hearing challenges.



Future Outlook

As hearing care continues to evolve, Cochlear remains committed to meaningful innovation that places patient outcomes first, with AI serving as one important component of a comprehensive approach to hearing healthcare that includes implant technology, manufacturing, clinical support, and ongoing patient services.

References

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