



Sound Bites Podcast Transcript

Episode: Amit Shahar on AI

Dave Fabry: Welcome to Starkey Sound Bites. I'm your host, Dave Fabry, Starkey's Chief Hearing Health Officer. In this episode, we'll be talking to Amit Shahar, the Vice President of Advanced Development here at Starkey. He's a friend, colleague, and someone I admire greatly for his ability to create and develop new technology that actually shows up in our products. He's one of the leading experts here at Starkey, who have been helping to write the roadmap for the entire hearing industry when it comes to advancements in technology. I can't wait to do a deep dive with him today. But before we do, a quick note to our listeners, if you have topics that you would like to hear more about, please send us an email at soundbites@starkey.com. We'd also invite you to rate, review, and subscribe to this podcast to be sure that you don't miss a single episode. And thank you in advance for doing so.

Now, back to our guest in the highlight. I'm just the appetizer here for Amit today. Amit joined us at Starkey six and a half years ago. I remember well a conversation that we had when you were a newcomer to the industry, and we sat at an American Academy of Audiology Conference where you came to sort of immerse yourself in all things audiology. He's been one of the driving forces behind our groundbreaking work in the hearing health technology, helping us to lead the industry, not only in terms of hearing but in terms of health and wellness, which is an area of personal interest to me, and also in the area of using intelligent assistant and really having the hearing aid act as the hub, if you will, for overall health and wellness. But job one is always better hearing. So, Amit, thanks for joining us finally on the podcast today. This has been long overdue.

Amit Shahar: Thanks for having me. It's great to be here.

Dave Fabry: Well, before we go any further, what I'd like to talk about a little bit before we go down many rabbit holes, I expect in the next half hour, we need some ground rules to make sure that we don't spill the beans because the boss will not be happy with us if we have any competitors listening to this podcast, looking for insights as to the future of our roadmap. So, remember that we're going to share work that we've gotten to this point and, a little bit, tease a little bit into the future, but let's not open up the roadmap completely, okay, deal?

Amit Shahar: Okay. That's going to be very challenging.

Dave Fabry: I know.

Amit Shahar: But let's give it a shot. Yeah. I think what we see today in the product are a thing that we started develop five, six, seven years ago. So what we are working on



now are things that you're going to be seeing in the product in six years from now. So I'll do my best.

Dave Fabry: All right, well, here we go. But first, really tell us a little bit about your background. What got you this far, and what attracted you about the hearing aid and hearing care industry?

Amit Shahar: Okay. I'll be honest, hearing aid industry was not on my bucket list, that's for sure. I was working in different industries. I started the defense industry, and then consumer electronics, and then the health industry. And my last job before coming to Starkey was at Intel. I was doing a lot of cool stuff, from augmented reality to virtual reality, to robot drones, mobile phone, very cool stuff. So I wasn't looking to move, but then Achin called, Achin Bhowmik, our chief technology officer, and he wanted to talk to me, and he explained, initially, I thought it had nothing to do with the hearing aid industry, but he had this vision about changing the industry, and he said he needs me to execute that. So that's how I find my way to the hearing aid industry. And I saw the spark in his eyes. And it turns out that, from a technology standpoint, the thing that I was working on throughout my entire career, which included sensors, and AI, and human interface, are actually very similar] to what I was about to do in Starkey. And that's what we're doing today.

Dave Fabry: Yeah. And I've come at this, as you know, from the complete opposite end. This is my 42nd year as an audiologist. So I've been immersed in hearing healthcare for a very long time, and I'm approaching this from that perspective, coming into the artificial intelligence and the way that really when you began... And do you remember what you said to me the first meeting that we had where we were walking around AAA, the American Academy of Audiology conference, about the industry-

Amit Shahar: I said we all look the same, right?

Dave Fabry: Yeah. You talked about the sea of sameness.

Amit Shahar: That's what I thought.

Dave Fabry: And that hurt a little bit because, like I say, when I've been in this industry for so long, we see incremental improvements. But in terms of what we've taken on since you joined and Achin joined, we really have differentiated. And I think that differentiated ourselves from the rest of the industry by really focusing job one hearing but also bringing in artificial intelligence. And I'd like to say, and not even kidding, that we put the AI in hearing aid by starting to focus on hearing aids that could, of course, help you hear better, but also live better by focusing on those health and wellness features, and the virtual assistant, and things. And so your comments to me when we first met still ring in my head about that sea of sameness. And I think now you can say that certainly because of the



emergence of artificial intelligence, and with that focus and outside perspective that you and your team brought, I think we can arguably say that there's not a sea of sameness anymore. At least I think we are differentiating ourselves in this space.

Amit Shahaar: I would definitely agree.

Dave Fabry: So I spoke of your team briefly. Tell us about the team. You're based in Tel Aviv, Israel, and that's where our advanced development group is that you lead up. Tell us a little bit about why there, and a little bit about your team and what it is that you are focused on doing, and how does that integrate with the rest of Starkey.

Amit Shahaar: Yeah. Okay, give a little bit of a background. Every product company always need to balance between the execution, which is releasing product, fixing issues, doing incremental improvement, doing support, et cetera. Versus developing the future product, future technologies. And in many cases, whenever there is a debate or an issue, execution always wins, right? It's always more important. And that's why the most successful technology companies in the world created a separate group, advanced development, or whatever name they call it, that is focused and almost like shielded from the execution so that they could... Regardless of what's going on, that they could still continue to develop the future. And that's why, when Starkey decided strategically to become a technology leader, that's where we decided to create this advanced development group. And advanced development group is chartered with developing new technology but also bringing to the market. It's not a research group.

Our job is not to just create papers and go to conferences. Our job is to bring these technology into product in collaboration with all the engineering groups and everyone. So one of the first things that we did when we established this group... And by the way, it came with a substantial investment, the decision... It's easy to take decision if you don't need to put money, but Starkey did decide to put a lot of money in bringing resources and recruiting the best talent that we could possibly find. And the first thing that we did we realize that there is only so much talent that we can find in the Twin Cities, and we decided to go and look for the talent where the talent is. And that's why we decided to go and open the first R&D facility outside of the US in Tel Aviv, Israel, also known as the Start-up Nation. And it's no coincidence that all the big tech companies have their R&D centers in Israel. There's a lot of [inaudible] there.

Dave Fabry: Let me stop you for a second on that. So why is that that so many technology companies have research and technology or research and development divisions in Tel Aviv? Because, as you said, Israel is known as Start-up Nation, but why is that?



Amit Shahar: It's a lot about the culture, the academia, the thrive for excellence, and I think it's a lot about the culture and how it is being pursued. I think that's a lot of researches about that, why, after the US, there are most start-up in Nasdaq from Israel. And I mean, it's a long conversation, but what we did and we decided to open a facility in Israel, and after that, we started hiring also in other location. In fact, today, in addition to Eden Prairie and Tel Aviv, we have more than 10 other locations just for advanced development. We have people in Europe all the way to the Silicon Valley. We go where the talent is. And this is really important if we want to achieve, and I believe we did achieve it to become the leader in technology in this industry.

Dave Fabry: As you said, the talent pool is very deep. And I think I've read somewhere where you totaled up all of the experience that we have with artificial intelligence in your team, and it's something approaching 300 years of collective experience.

Amit Shahar: Yeah. Yeah, on AI. We have a lot of other experience, but yeah, we have over 280 years of work experience in AI.

Dave Fabry: That's remarkable because I think, again, your charter, in addition to focusing on those things, as you said, I say that many invention dies a lonely death if it doesn't innovate, that is, unless it makes an impact in the market. And your team, really in its relatively short existence, has already contributed to many features and technologies that have shown up in Starkey products already, and the showcase for the future, as Brandon says, "We're just getting started." And so let's talk a little bit about what they're working on now, again without spilling the beans, but talk a little bit about the overall direction. How much effort is focused on better hearing versus some of these other projects that sort of spill over into overall health and wellness, and virtual assistant, and things like that?

Amit Shahar: By far, our biggest investment is on better hearing. I mean, goes into improved sound quality, speech in noise. It's not just about the hearing aid itself, it's also about providing more tools to clinicians, a lot more technologies in various areas. We do have sufficient effort on health and wellness and in intelligent assistant. We do believe in the future of that. And you said we are leading the pack in these areas as well, but this is, I would say, it's the icing on the cake. Most of our efforts is in best hearing, as we call it.

Dave Fabry: And if... Go ahead.

Amit Shahar: If you want to start talking about more detail, then, as you mentioned, AI is going to eventually overrun every aspect of algorithms, and that's where we are putting a lot of our efforts in.

Dave Fabry: Yeah. And so with that, let's dive into that area a bit. And I'd like to begin with defining the way you think of an overarching definition for AI. I like to say that artificial intelligence has become ubiquitous but also is bordering on a



buzzword. You can't hardly turn a television commercial on, or look at a social media ad, or feels like have a conversation these days without someone throwing in AI into the mix. And so I think I read something just last weekend where consumers are increasingly suspicious of products that use AI in their advertising. And I think some of that is fear-based or a lack of understanding. So let's begin by providing this intimidating definition of artificial intelligence. Talk a little bit about how you define it and how does it work on a very basic level.

Amit Shahar:

Okay, great. My favorite subject. So you had mentioned AI is the very broad term of any system that can reason. It doesn't really say anything and I... To be honest, a lot of companies abuse this and say, "Oh, we are doing AI." But what we are doing is there is a machine learning, which is a type of AI or deep learning. And let me explain what it is. So if we take the traditional algorithm development, you give the computer or the hearing aid very specific rules and instructions, a very explicit... And you're trying to find all the various situations that would happen, and you tell it, "If you see that, you do this. If you have that, you do this." So you're kind of writing in very, very detailed specific instructions. And that's the traditional algorithm. The problem with that is what happened when the hearing aid or a computer sees something that he didn't see before, then he don't know what to do. Okay. So it's always limited.

When you're talking about machine learning, then you still have rules. You give the machine rules, but then you give it a lot of data and learn from the data what to do. The good thing about it is that in this situation, when the computer or the hearing aid finds something that didn't see before, then it can still reason and still figure out what to do based on what it learned until then. So he could do things that were not specifically explicitly told him to do. A subset of that, which is what we're doing, we call deep learning. There are no rules. You give the computer a lot of information and let it figure out what the rules are and what to do. And it gives it enormous flexibility. And in fact, if you think about it, this is how our human brain works, like you as a human being, I presume-

Dave Fabry:

Mostly.

Amit Shahar:

... if you... Yeah, mostly.

Dave Fabry:

I'm becoming a cyborg, yeah.

Amit Shahar:

If you see a dog or a cat, nobody gave you instructions of count the number of legs, or look for the ears, or do something. How do you know that it's a dog? It's because when you were a kid, you were shown examples. So that's exactly how the DNN, or the deep neural network, is working. So it's no surprise that the architecture of how this deep learning is working it's based off neural network. That's how the architecture is built in the computer and it mimics the biological brain. That's what it is. So I hope that that explains it. It gives us enormous flexibility and that's the greatest power of that.

Dave Fabry: And I think then how can we provide definitions or an explanation for, as you mentioned, AI in general machine learning and then deep learning or deep neural network to help their patients understand it? And I think many will say, "Well, we've used machine learning and hearing aids for the last 10 to 15 years," and people will say, "We've had AI from a machine learning standpoint," and that largely is through environmental classification, and that's a useful feature. But as you say, that's been based on the rules that we know about speech spectral, and temporal, and periodicity characteristics, attributes of speech that differentiate it from noise, and music, and wind. But it can't capture every element of what it is that we're looking for. As you said with DNN, we're not giving it those feature rules. But I think the granularity depends on how do you define what the goal is for your deep neural network?

Amit Shahar: Yeah, I would say first, if you ask me what are the benefits of DNN, you have to understand what the benefit for the patient, for the DNN. I would say, let's start one big advantage with the DNN is that it's just better in real-life, real-life environment. Theoretically, if you have two hearing aids that's on paper, they look the same or tested the same in the lab, I would always prefer the one with the DNN because, what I explained earlier, it is doing better job in uncertainty in dynamic environment. When things change... I mean, in the lab, you can always set it up to be one very specific, perfect situation, but the DNN is better in dynamic environment, it's better in non-stationary environment, like in speech in noise, it is better in any kind of acoustic scenario. So you don't have to just have predefined acoustic, it could do any acoustic. It is much, much better in performing classification, like knowing how to classify what is the environment. It allows better end-to-end optimization. It is much better in personalized solution, doing things that are very personalized to a patient.

And it is also better in sense of fusion, like things taking acoustic and a new data and fuse it all together. So lot of advantages that comes with the DNN, it's not just a buzzword. That's reality. The way to explain it other than telling, "This is just perform better in real life." I like the brain analogy because if you think about how, as we grow up, we lose brain cells and the hearing aid with the DNN actually brings back neural network, it is like a piece of brain that, as you get old and you lose neurons in your brain, the hearing aid brings back more neurons. I think that could be a good way to explain it. It actually help you upload some of this work by having small brain of its own.

Dave Fabry: And I need every bit of those brain cells as I get older and older every day. So then, staying within our domain on acoustic classification, let's start there and talk about a machine learning classification system. And I like to say, on the base of studies that I've seen in looking at the way a hearing aid can automatically classify in comparison to the way a human would classify an acoustic environment as quiet or noisy or musical or windy, et cetera, that you can get to



about 80, 85% agreement between machine learning classification system in a human.

But those people that want the remaining 10 to 15 to 15 to 20% of environments, you and your team developed Edge Mode as a solution for that by combining machine learning classification and then really capturing the listener's intention to be able to say, "I'm in a challenging environment now," no matter whether that's a quiet or noisy or any kind of environment, to capitalize on the remaining 15 to 20% of situations that confuse machine learning situations because it's usually the case that you're listening for one voice amidst other voices or music, which can be both a stimulus of interest or a noise. And you and your team really developed the original Edge Mode as a means of situational application of the listener's intention combined with machine learning. Is that correct?

Amit Shahar: Yeah, and that's actually one of the first examples, good examples of using machine learning on a hearing aid. So you said Edge Mode because it is running on the edge, it's running on the device. And that's super powerful, and it's no coincidence because, if you look also in other industries, the first things that were used by machine learning were in classification. Machine learning is really, really good in doing classification. And that's why one of the first things that we were doing, and I think it's a very successful feature that we have, and it's only getting better over time.

Dave Fabry: Yeah. Over time, it's become one of the most widely used features by patients, and someone who works with patients once they understand how to use Edge Mode, they increasingly use it in lieu of manual programs that I apply to their hearing aids for situational environments, restaurant, crowd, and music. And increasingly, patients are using what we call the Personal program plus Edge Mode. And that feature really isn't static. It's using DNN, and you're talking about it being better for dynamic situations. But talk a little bit about the way Edge Mode and Edge computing has evolved from its original implementation to where we are today.

Amit Shahar: Yeah. First implementation, we had it on the device. We later on added because people were looking to see if there are other ways to activate it, we added the ability to use the mobile phone and also have some more aggressive or less aggressive solution. And then, as a lot of people say, "Oh, if I have Edge Mode, can I use it all the time? Why can't I use it all the time?" And we take these requests very seriously, although it's almost like being in turbo mode all day. So not always recommended, but it just released in previous product, dynamic Edge Mode, that allows you to turn it on, and it constantly keeps you and do the adjustment and all the time look for the right and the best scenario and the best setting for the patient. So that's what we did.

Dave Fabry: And even for some of my... Oh, excuse me. Go ahead.



Amit Shahar: I just wanted to address... You said something earlier that I wanted to address about companies that claim to have DNN, and how do you know if it's real? So if you look at the advancements of DNN, the problem with DNN and why it took so much time for it to get into the hearing aid is because it requires a lot of computing power. It's almost impossible to put such a computing power on the hearing aid, and the only way to do it is to actually put it in the hardware, bake it into the hardware. And that's what we did in Genesis. We took this neural network and we put it inside the silicon on the chip as part of our hearing aid. That's what allows us to open the door for all sorts of new capabilities that were just not possible before. So if you hear someone doing machine learning and just ask, I mean, "Do you have a neural accelerator on your hearing aid?" If not, then you can always question if it's real or not.

Dave Fabry: Well, and even that, I mean the thing that is amazing to me as a practitioner who works with patients, and we've seen a very rapid transition from replaceable zinc-air batteries to rechargeable batteries over the last five years or so. And I think for me, it's quite remarkable that we've been able to deliver Genesis with that DNN accelerator directly on the silicon, as you said, to deliver 51 hours of battery life up to 51 hours with the RIC RT. And that's with being able to use Edge Mode, which uses that DNN application situationally or automatically throughout the day. If a person just turns it on in the morning and goes throughout their day, when you have a separate path or a separate chip that is doing DNN, that can really take time in terms of transferring that information between the two chips, and that increases power consumption and shortens battery life.

And I think what we've done with Genesis AI is nothing short of remarkable by taking range anxiety for the hearing aid user off the table by having them have that confidence really at the time that they purchase their devices in years down the road that when they put their devices in the morning, regardless of how much they're going to engage with Edge Mode and Edge Mode Automatic, they're still going to get all day battery life today and three, four, five years in the future.

Amit Shahar: Yeah, that's a very interesting point that you bring up because we did consider in the past to have a separate chip, and we decided that it's not efficient if you add it as a separate chip. Then, yeah, a lot of the advantage is diminished by passing information between two chips, and definitely the power is a big drag. So that's why we took the time to develop a ground-up design that will have the neural network as part of that. And even if you look at biology, you don't see a lot of successful animals that have more than one brain. Most of the successful animals have one brain that is optimized and there are some that have few brains, they're not very successful.

Dave Fabry: I like that analogy. Well, and now AI isn't only about Edge Mode. I mean, when we're talking about better hearing, and you talked about one of the advantages



of AI is better at personalized solutions. Talk a little bit about other hearing-related examples that also incorporate functionality that is provided by AI to get to solutions, let's say first fit faster and more personalized for that individual.

Amit Shahar: Oh, yeah. We have a lot of examples. Now I need to think what am I allowed to say and what I'm not allowed to say. But I don't think-

Dave Fabry: Talk about features that are in the product.

Amit Shahar: Yeah, we use the DNN to also improve speech enhancement, suppress noise. As I said, it's really good in doing that. So I think that was the second thing that we incorporated in our hearing aid. We're also using machine learning in various form, also in starting to help clinicians in fittings. There are more things that I can disclose, but it's not just about running on the hearing aid. Most of the things that we're doing are on the hearing aid. We are using that in improving fitting and various other areas. And you-

Dave Fabry: Two of my favorites are the way that we're acoustically matching with the feedback initialization stimulus because, of course, when we don't have the benefit of having the patient in front of us when we're developing using our fitting strategies and fitting formulas, so we're optimizing to KEMAR. But the ways that your team developed the ways to use the feedback initialization stimulus to acoustically adapt to the individual's ear characteristics, to the way the depth of the mold, the depth of the receiver in the ear canal, and use that to get to first fit a personalized solution faster by incorporating that feedback initialization stimulus, that's one of my favorites.

And then the other is auto-REM, which I use on every single patient with the real ear system that I have, and it's compatible so that now, as opposed to the past, where we could say and argue all day long to a clinician that we believe in best practice, but we also believe in e-STAT. Well, they didn't have that formula in a lot of the independent REM machines, but now we've partnered with them to incorporate that e-STAT, or NAL-NL2, or whatever target they use and use the ability of machine learning to quickly optimize to whatever prescriptive target that you have faster than what a human could do.

Amit Shahar: Yeah, yeah. These are excellent examples, and we are working to improve that more and more. A lot of things in development at the moment, including more improvement and a lot of new technologies that are running on the device itself using our neural network.

Dave Fabry: Love it. Well, then, moving to health and wellness, for me, the best example of that has been where the industry's first and still only manufactured to incorporate a fall detection feature. And that was also developed by your team and enhanced by your team.



Amit Shahar: So we strongly believe in the importance of that to our patient. And as you said, we started with making sure that the people who already failed that they get the help needed, but we continue to develop capabilities, including the ability to measure if someone is at risk of fall. So going from just detecting it after the fact to be able to detect it before the fact, and we have more on the roadmap to get more and more in helping patients with this huge problem, which has a lot of relevance for our patients because of the close proximity of the balance problem with hearing problem. So we are working on that, continue to work on that and invest in this area as well as other areas around that.

Dave Fabry: Yeah, I think you really hit on one of the areas that's most exciting to me of an advantage of AI is to be able to integrate different sensors, whether that's the inertial measurement unit or IMU sensor that we first incorporated in Livio AI to monitor physical activity, tying to that comorbidity with cardiovascular disease, but then also using that physical activity sensor to detect falls. Fall detection feature is fantastic, but if a person falls and breaks their hip, that's already too late. It often starts a downwards health spiral. So the idea of being able to evaluate gait, balance and strength and work towards the patient being engaged in trying to improve the deficiency in one of those three areas is really exciting.

And I look forward to where we're going with that. We won't dive into that on much deeper level here, but I think we like to say hearing care is healthcare and tying into those activities or comorbidities like cardiovascular disease, cognition, fall risk, which even a mild hearing loss places a person at three times the risk of falling. It's fertile ground for continuing to study ways that all patients have to do is wear their hearing aids and then use the integration of inertial measurement units, microphones, the devices, and then the listener's intent to provide that integration of all of the human with the neural network, with the machine, and those sensors. It's really an exciting time.

Amit Shahar: And because we have... Our hearing aids are always on our patient, and they are at the best location on the human body to measure all of these capabilities, and that's what makes it so exciting, the potential and the relevance of doing that on a hearing aid. That's where we are very passionate about, continue to develop technologies in this domain.

Dave Fabry: And as you said, the ear is a remarkably good spot to measure a number of biometric functions, including heart rate and a host of other things. So I look forward to talking and having you back in the future when we get to the point where we can talk more about that. The other thing briefly on the intelligent assistance side in ways that patients can be more engaged in the ongoing use of their hearing aids and interfacing with the practitioner. One of my favorite features that we had a long time ago but really wasn't widely used until we made improvements, and your team was instrumental and influential in the



improvements in the self-check feature, a dashboard that enables the patient to quickly evaluate one of the most pressing questions on a day-to-day basis.

Patients say, "Well, how often do I need to replace a wax guard in my hearing aid?" And I said, "When it says that you need to." And I believe we are still the only manufacturer to incorporate a self-check feature that the patient can quickly run in just a matter of seconds that provides a diagnostic assessment of microphone, circuit, and receiver status. And talk a little bit about that and maybe hint at where we're going in the future.

Amit Shahar: Yeah, I mean, first you remind me that about a year or so ago, when we went to do kind of a tour at clinic, we were kind of surprised that the clinicians were not recommending patient to run the self-check. And I'm happy to see that this is growing rapidly.

Dave Fabry: Really rapidly.

Amit Shahar: This is basically... If all patients will learn how to use it, they will have a better experience, and their clinicians could avoid the issues ahead of time. So we don't rest on that. We want it to become more sophisticated and be able to do testing in the background, to be able to check all the time, to see how things are going, and also to allow clinician to get more information about what's going on in the field. We would like to give more power to the clinicians. When a patient comes to them, that they will already have the ability to know what happened, what is the situation, have recommendation of what they should do. It's about giving a lot of power to the clinicians to make them be more sophisticated.

And some of these things are... I mean, all of these things are kind of running in the background. Nothing that you need to do in order to get that. And eventually, as a clinician, you'll get all these abilities. We're spending a lot of effort in this domain. I hope we can maybe soon review some of these things and be more specific about the capabilities that we provide, but this is an area that is very important for us.

Dave Fabry: And I see we're already reaching the limits of our time that we have scheduled for this podcast, but I really appreciate that you bring up the point that we have some deep collaborations with academic environments like Stanford and other universities. And also, the hearing aid industry in the past has often been very provincial in terms of wanting to invent everything themselves. And I think your team pulling in from that target rich environment in Israel and around the world from people who have had experience not only in the hearing industry but with other manufacturers and coming from other industries, some of those partnerships have already paid dividends in terms of innovation that we've introduced into the market. And I know we're continuing to lead in other areas because of the ability to make connections with other tech leaders and identify



synergies and opportunities for everyone to raise awareness for the importance of hearing as a vital human sense.

Amit Shahar: Yeah. I'm smiling because in a way it reminds me that when I joined, that was really how I saw the industry was working, but it's all in-house and this thought about, "Why do we need to do everything in-house?" We're setting the goal, we're trying to get there, and if someone has a better solution that we could use or if someone is smarter than us in some areas that we could collaborate on, we would do it. We are trying to get to the goal of getting the best product, the best solution to our patient, the best service to our patient. How we get there? We need to figure it out. If someone else has better solution or if someone can help us in getting there, we will use that. That's our approach today.

Dave Fabry: Yeah, couldn't agree more. Well, one more question and then we'll wrap, but if you could make one bold prediction as someone who's involved as a visionary for the hearing aid industry and the hearing industry, what's one big prediction for hearing aids in the coming years that you might make?

Amit Shahar: One?

Dave Fabry: Just one.

Amit Shahar: It's easier to predict the future when you are the one creating it, but I would say... Let me try to say a few things just on the technology side, because... Definitely, I would say, neural network, DNN will be everywhere. I think hearing aid will become more personalized, will understand the environment better, there will be much, much smarter. I strongly believe that hearing aid will also become the gateway to other devices, like the personal assistant that we've been talking about, that it will seamlessly connect to a lot of other devices. I think that that is coming. And also health. I think health will also be part of it. So that's-

Dave Fabry: Yeah. I think-

Amit Shahar: ... my prediction.

Dave Fabry: Yes. So thank you so much, Amit, for being with us today to share where you've been, a little bit of where we are, and also a tease on where we're going. And to our listeners, we thank you for listening to this episode. Please rate, review, and share with your friends, and colleagues, and your networks. If you enjoyed this episode and if you have ideas for content in future episodes, send us a note at soundbites@starkey.com. Amit, I can't thank you enough for this engaging and intriguing discussion, and I appreciate as always, your friendship and having you as a colleague here at Starkey.

Amit Shahar: Thank you. Thank you.



Dave Fabry:

Take care, and we look forward to seeing and hearing you again real soon on this broadcast and other podcasts in the future.