

Professor Deborah Kerr

Professor Deborah Kerr is a research dietitian at **Curtin University** in Australia. She is part of a team of dietitians and engineers who are creating an app to help dietitians monitor people's nutritional intake. In this podcast, she shares the importance of taking opportunities that come your way and not worrying if you don't have a plan worked out.

Break the **podcast** down:

01:04 You and your team have developed a new app that can use a photograph of someone's food to work out the nutritional content of their meal. Could you give me a quick overview of the app and your reasons behind developing it?

The work actually started way back in early 2000 when we were starting to work with colleagues at the University of Purdue. We were interested in finding easier ways for people to assess what they eat. Around that time, we were using food records – where people wrote down everything they ate. Obviously, that was a very labour-intensive exercise, both for us as researchers but also for participants who were manually having to write things down. So, we started to think there must be a better way to do things.

Around 2005, we started to get devices where you could capture images, so we had the idea that if we could use images, that might make it a lot easier for people. This has been quite a long journey really; it's not an overnight success. The big turning point came when we found some engineers at Purdue University that we could collaborate with, because they had an interest in the whole area of machine learning and image recognition. So it was really that combination of us, as the dietitians having the ideas, working with the engineers to bring the two together.

02:42 Those are two very different skill sets – your dietitian and nutritional side of things and the machine learning and computer science stuff. It's two different fields, so collaboration has been really important for you in this project.

Absolutely. We have the ideas but we really don't know what to do with them. If it wasn't for the engineers, all it would be is someone using their own mobile phone to capture images. The real advantage of having the engineering technology is the use of being able to confirm what's in the image. Over time through machine learning practices, it gets smarter and smarter. It will start to learn someone's diet and go, 'Aha! That looks like an apple' or 'That looks like a banana, I've seen that before'. So that's really where we're getting to.

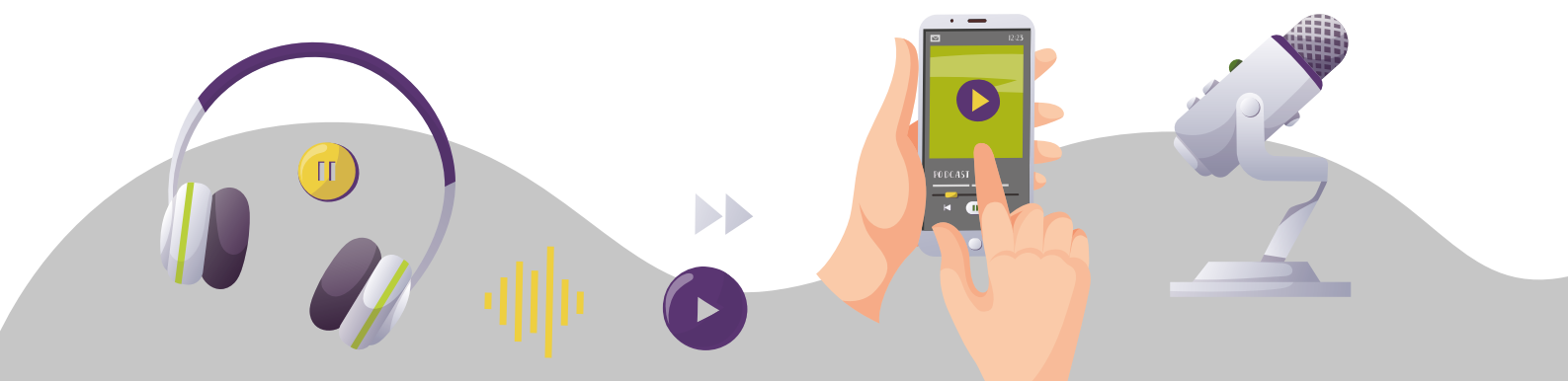
But of course, food is complicated. If someone likes fried rice, for example, that can look quite different to the next person's fried rice. If you got fried rice from China, it's quite different from what my Australian fried rice might look like. Part of the challenge for the engineers is, 'how do you recognise that food?' It's got to learn all these foods. With faces, they're sort of similar dimensions in a way, whereas food can look like anything on a plate. So it's trying to learn the different foods that appear as they do. I think people are going to appreciate there are so many variations now in the food that we eat so that's really added to the complexity.

04:27 That's one of the challenges for the AI, but what are the challenges of collaborating with such a wide range of skills?

The challenge is we have ideas about what we want as dietitians, what we want to accomplish and sometimes these things are not possible. So the engineers, working with them, it's really for them being able to say, 'this is what can be done'. But I have to say, the engineers are so amazing that over time, all of the things that we've wanted to happen, they've been able to make it happen. It's really that partnership between the engineers and the dietitians and having that really strong working relationship. It's them appreciating our skill set and us appreciating their skill set that made it work.

05:25 It sounds like a whole team effort. Previously in your career, you were a dietitian for elite athletes. I was thinking about it this morning, how a golfer or tennis player or a sprinter, on the face of it you think it's a solo project, but actually there's so much collaboration going on behind the scenes. I wonder if you could tell us a bit about your role in that side of things.

That was partly how I got interested in the whole area of dietary assessment. Some of the athletes I was working with, such as an elite rower, they consumed a lot of food. When I was asking them to keep a record of what they were eating, I could see the look on their faces. 'How much work is going to be involved in this?' It was quite a burdensome task. So athletes really helped provide the impetus 🚀



for me to pursue this area of research because I thought I have to come up with something that's going to make it easier for people. Elite athletes are an area where dietary assessment, and understanding what the athletes are eating and how it impacts performance, becomes quite an important reason why we want to assess what people are eating.

06:47 It's interesting the way that's moved you into this part of your career and the way that a career progresses. You can jump from place to place without really having a plan. Did you have a plan to become a research dietitian when you were younger? How has your career progressed and where have you moved through?

It's interesting because if you'd said that I would end up being a research dietitian, I don't know that I would have believed people. But it's really making the most of opportunities. I guess I've always had an interest in understanding why things are. As a child growing up, I was one of those 'why' kids. I probably drove my parents crazy with asking so many 'why' questions, but that's what I love about research. You can look at questions and find answers to them. Some of those things are not what would happen in the lab, it's actually out there in the real world, it's answering real-world questions and helping people to better understand what they're eating. It's one of the things I'm really passionate about. So I guess my career did evolve over time. There were opportunities to study and to answer my 'why' questions. And that's where I got interested in the research pathway.

08:09 Do you like the idea of having a plan, following it and knowing where you're going? Or did you take those opportunities as they came, and went with the flow of things?

I think I was one of those people who took the opportunities as they came along. I really didn't have a strong plan. I knew what I was interested in. I loved sports and I was interested in sports dietetics but I also loved working with people. Those opportunities presented themselves and I took them as they came along. I didn't have a firm plan in mind.

08:42 For a lot of high school students who might be listening to this, they're at points in their career where they are being told to make plans for the next step and where they want to go, but then stuff like this happens where you just have to follow your nose. Do you have any advice for how to know which are the right opportunities to take, or how to find your path through your career without necessarily sticking to a plan all the way through?

I think it can be very stressful for high school students to feel like you have to have it all worked out, but that certainly wasn't my pathway. For me, it was one step at a time: Am I interested in science? What are the subjects that will help me pursue a career in science? What is the area of science I'm interested in? Is it health science, or is it engineering?

I still remember when I did a subject in nutrition – it was sports nutrition and suddenly I was really excited. It's like, 'Oh, this is what I want to do!' In the course, you'll find things that will interest you and pull you in a different direction. So I

think particularly in today's world, there are so many opportunities so you have to be open to those opportunities and not feel burdened with having to have it all figured out. That's certainly been my pathway.

10:25 It's tricky, that pressure, feeling like everyone else has got it figured out. But I think a lot of people are just waiting for the next opportunity and just taking it as it comes.

I think we think that other people have got it all figured out but really, most of us are still thinking about it. Following your passion, I think is really important. Find out what you're passionate about in life. There are so many career opportunities where you can follow your passion and do what you really love doing.

10:59 When you were younger, what were your passions? Was it sport, was it food?

My passions were definitely sport and food. I grew up in the country and my family were great cooks. Every year when we got together, there'd be a competition about who could bake the best cake! Someone else would have tried something new so there was a lot of recipe swapping. My grandmothers were great cooks. I grew up in a family where it was common for me to cook from a young age and when my parents were having parties, I would help with the cooking.

I also grew up in an environment where sport was really common, so I had that combination of sport and food. I had a brother who loved science and he influenced me as well. I still remember getting really excited when he got a chemistry set and watching him create things in test tubes in the back yard and I was just fascinated by that whole thing. So I think my brother was also responsible for influencing me. He was an engineer, interestingly, so he also gave me that love of science from an engineering perspective.

12:21 Talking about collaboration again – where you've come now with this new app and this new development, the collaboration throughout your whole life, your brother inspiring you to do science and your whole family cooking around you... The collaboration stems all the way back to your childhood and having people in your life who are helping you along the way to figure out where you want to go and what you want to do.

That's very true. When I look back and reflect on it, it has been all of those influences; your family and your friends and the opportunities that present themselves that really lead you down a pathway that you never thought was possible. That's the most exciting thing, I think, not knowing where that pathway is going to take you.

