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Eyes through the sky

Business topics

By Health View

Professor Yogesan Kanagasingam wasn't short of career options when he moved to Australia two decades ago. That he's a visiting scholar at Harvard University, was a Fulbright Scholar to Stanford University, has been nominated as Australian of the Year, and has 35 patents to his name gives some indication of his drive and intellect.

Nonetheless, in 1996 he moved to Perth to take up a position at the University of Western Australia. That set him on the path to his current role as Research Director of the CSIRO's Australian e-Health Research Centre.

"My wife still questions why I rejected the job offer from the Lawrence Berkeley National Laboratory [at the University of California] to come here. I had the opportunity to work alongside 12 Nobel Prize winners!" he laughs. "But Perth is a great place to raise a family."

Shortly after arriving Australia, Yogi (as he encourages everyone to call him) began wondering if the internet could beam medical services into remote communities. "I've wanted to implement something like a remote eye screening program for 10-15 years," he says. "But it wasn't something I was able to get off the ground until the National Broadband Network (NBN) happened. At that point, funding materialised for those wanting to trial telemedicine initiatives."

Eye testing in cyberspace

Yogi had a straightforward plan to tackle the vision problems plaguing Indigenous Australians living far away from medical facilities. A special camera (and the required training) would be given to nurses based in remote communities. They would take pictures of community members' eyes and send them to ophthalmologists.

Ophthalmologists would then either give the all clear or schedule a face-to-face consultation if the image revealed a risk of blindness arising from diabetes. "Diabetic retinopathy is a sight-threatening disease. The rate of blindness in indigenous Australians over the age of 40 is six times than non-indigenous Australians," notes Yogi.

Thanks to a $1.9 million grant from the Department of Health and Ageing (delivered through the NBN Telehealth Pilots Program) Yogi was able to realise his long-held ambition.

"Satellite dishes had to be installed around the Torres Strait Islands and southern WA so we could send the retinal data to specialists," explains Yogi. "We also had to develop a low-cost, user-friendly retinal camera.

But the most complex technical task was developing the platform software, called Remote-I."

Having got the system up and running, Yogi encountered two unplanned-for, non-technical challenges. "Ophthalmologists are overstretched as it is and because it isn't a procedure Medicare has yet had to accommodate, there was no fee provided for reading the retinal images," he says. "We got around a lack of ophthalmologist volunteers by getting ophthalmology fellows to review the images. In time, we largely automated the process. We developed software that could distinguish between images of healthy retinas and ones that needed human scrutiny."

Post-automation, Yogi ran into a more gratifying problem. "I started getting complaints the program had been too successful. I was told too many patients at risk of blindness were going into the system!"

From remote Australia to China

Throughout the Remote-I's trial period, 1088 people based across WA and the Torres Strait Islands were tested. Of those, 68 were found to have diabetic retinopathy and eight at serious risk of becoming blind. In the coming years, millions more may be able to avoid vision problems thanks to Yogi's inventiveness.

"Last year we took this technology to 10 hospitals in China's Guangdong Province, which contains over 100 million people," Yogi says. "So far 10,000 people have been tested. And now the CSIRO has licensed Remote-I to a company based in Silicon Valley called TeleMedC. It's planning to launch it in the US, then around the world."

Yogi predicts telemedicine is approaching an inflection point. Soon it will be seen as far more than a stopgap option for those unable to access urban medical facilities.

"Remote-I is about to go into a diabetes-screening clinic in the middle of Perth," Yogi says. "It will be used to quickly and cheaply work out who needs to see an ophthalmologist and who doesn't. The potential for telemedicine to reduce the costs of delivering health services and perform a triaging function are enormous.

"That's why governments, as well as major corporations such as Telstra, are now starting to invest heavily in it. My goal is to continue to play a role in using telemedicine to improve people's health, especially children and the disadvantaged."

Key Takeouts

- Professor Yogesan Kanagasingam (Yogi), Research Director of the CSIRO's Australian e-Health Research Centre, is using the NBN Satellite to tackle the vision problems plaguing indigenous Australians living far away from medical facilities.
- A $1.9 million grant from the Department of Health and Ageing helped fund satellite dishes, the development of a low-cost, user-friendly retinal camera and the platform software, called Remote-I. Nurses based in the communities take pictures of community members' eyes and send them to ophthalmologists to review.
- he trial period saw 1088 people tested across WA and the Torres Strait Islands with 68 found to have diabetic retinopathy and eight at serious risk of becoming blind.
- The technology has since been used in 10 hospitals in China's Guangdong Province, which contains over 100 million people. So far 10,000 people have been tested.
- And now the CSIRO has licensed Remote-I to a company based in Silicon Valley called TeleMedC. It's planning to launch first in the US, then around the world.

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