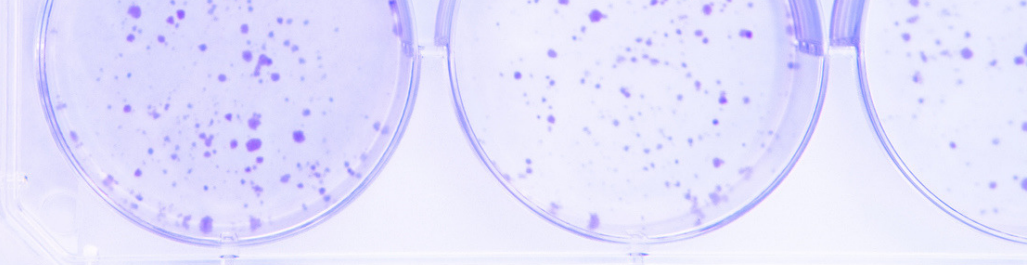




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An Eye on AI: Putting Eye Health in Patients' Hands

What is the problem?

Vision impairment and blindness are major public health problems in Australia. Over 50% of the blindness in those aged over 40 years is caused by just three diseases. Even though 80% of vision loss is avoidable, around 50% of cases in Australia are undiagnosed. These diseases are hard to catch early though as patients often have no symptoms. If we could do routine photography of people's eyes we could screen for these problems but unfortunately examining these images would require a huge additional trained workforce.

About this research translation project

This project removes the need to train additional professionals to examine retinal photographs by using an artificial intelligence system to do the work for us. A technique called deep learning allows photographs to be rapidly examined so diseases can be predicted early. Before the system can be utilised however it needs to have 100,000 already labelled images to learn from. Some of these images can be sourced from the Google DeepMind Project but this does not cover all diseases – for example glaucoma. More data is needed.

This project will use a web-based system that incorporates an artificial intelligence (AI)-based automatic image assessment algorithm with proven efficiency and accuracy. Some 85% of the Australian population will visit a GP at least once every 12 months - routine simple eye imaging will be used at GP visits and those images will be automatically assessed by the AI system. This will be a real-world study to assess the impact, feasibility, and cost-effectiveness of this model in a randomised trial.

What will be the impact?

This project will increase the effectiveness with which we can detect eye diseases before symptoms become noticeable. The trial will determine whether patients are amenable to routine scanning and whether or not the use of AI systems in this case are cost effective. Given the economic impact of vision impairment and blindness, the successful deployment of these new techniques will significantly improve many people's health outcomes.



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