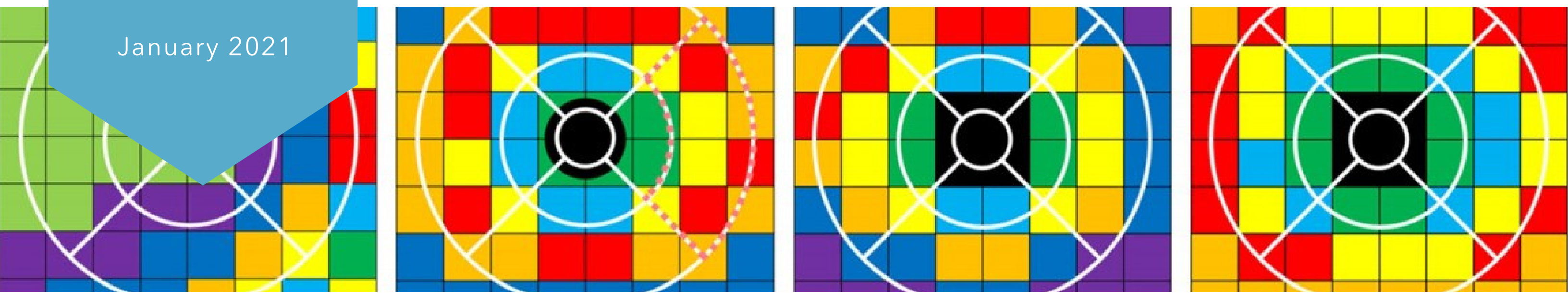
Monthly publication digest

January 2021

Centre for Eye Health Research

A joint initiative of Guide Dogs NSW/ACT and The University of New South Wales



Matt Trinh
PhD candidate
Centre for Eye Health

Modelling normal age-related changes in individual retinal layers using location-specific OCT analysis

Matt Trinh, Vincent Khou, Barbara Zangerl, Michael Kalloniatis & Lisa Nivison-Smith

Current OCT analyses are limited to arbitrary spatial detail such as the ETDRS sectors which assume symmetric and concentric neuronal distribution around the fovea. This study by lead author Matt Trinh used a novel method of OCT analysis, i.e. spatial clustering of average 8 x 8 macular grid-wise thicknesses to quantify topographical patterns in each individual retinal layer. This method revealed more extensive spatial definition and less variability when compared with using the current ETDRS sectors

Clinical implications:

As a result of this work, the study authors were able to form a normative database for the Spectralis SD-OCT for each individual retinal layer using CFEH's own patient population. The results include rates of age-related thickness changes, which mostly occur after the late 30s. Lead author Matt Trinh has developed and is currently testing a clinical tool for application of this normative database. This will simplify the process of comparing OCT thicknesses of diseased eyes to a normative database, particularly in the retinal layers not currently quantified by the Spectralis, i.e. the INL, OPL, ONL+HFL, IS/OS, and RPE.

Vision impairment provides new insight into self-motion perception

Wilson Luu; Barbara Zangerl; Michael Kalloniatis; Stephen Palmisano; Juno Kim

The perception of self-motion is important for knowing where we are in an environment. This study by lead author Wilson Luu shows that this perception may be adversely affected in AMD and glaucoma. Up to 74% of patients with these diseases will perceive visually-mediated self-motion at a different speed to normal and may also notice people or vehicles moving differently. Patients may compensate for this altered perception by moving at a different speed leading to a mismatch in sensory information. This may lead to increased accidents and falls. This study also shows that these patients may experience lower levels of severity of cybersickness (motion sickness-like symptoms associated with simulators and screens) with virtual reality (VR). As such, VR may be a useful tool for mobility rehabilitation.

Clinical applications:

When assessing patients with AMD and glaucoma, this study may prompt additional questions or observations:

- How fast/slow is the patient moving/walking/driving? Do they/their passengers feel safe? Impaired motion perception can increase risk of accidents.
- Are they bumping into people/moving objects? Is there any misjudgment of steps/footing? Are they using their other senses to move around, such as hearing? The patient may need to regularly readjust skills to account for integration of sensory information with vision impairment.
- Are they having trouble with orientation or mobility? The patient may benefit from working with Orientation and Mobility instructors.

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