Master class EYE TRACKING

Assessment and interpretation of eye movements for visual clinical practice

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Pel teaches medical physics within the department of Neuroscience. His scientific research focuses on development of new diagnostic markers in the field of sensory and motor integration in humans. His current projects relating to translational medicine are:

- Cerebral visual impairment in preterm born children
- Eye movement perimetry
- Implementation of eyetracking in clinical practice
- Eye-hand coordination in patients with neurodegenerative diseases

1990-1997   MSc Biomedical Mechanical Engineering, Twente University, Enschede

1997-2007   PhD and Research Fellow at the dept. of Urology, Erasmus MC

2003-2007   Scientific researcher at the dept. of Biomedical Physics and Technology, Erasmus MC

2007-   Assistant professor at the dept. of Neuroscience, Erasmus MC

Master class outline

Humans make tens of thousands eye movements during the day. These eye movements are closely coupled with the system for visual information processing. Therefore, measuring eye movement characteristics can not only give information about oculomotor control, but also about the quality of visual processing.

Measuring eye movements ('eye tracking') can be done non-invasively and in a remote manner. This makes it a patient-friendly method that can be used from 1 year of age. By combining an eye tracker with a monitor that shows a specific visual paradigm, you control which visual and oculomotor functions you measure (for example: perimetry, oculomotor function, processing of motion or form information, visual attention and visual search).

Various research projects have shown that eye tracking based-methodology is a reliable and sensitive tool for the assessment of visual processing functions. These results have led to the application of eye tracking-based methods in clinical populations, for example in patients with nystagmus, (suspected) cerebral visual impairment, ophthalmologic disorders, or neurodegenerative disease.

The goal of this masterclass is to provide participants with knowledge and practical insights into the world of eye tracking for (visual) clinical practice. We will practice the use of eye tracking and will discuss the design of visual paradigms and the choice of suitable outcome measures on a functional level.

Timetable

30 min	Background
	Introduction into eye tracking, methodology, and its use in visual clinical practice
5 min	Introduction to activities
40 min	Do-it-yourself
	Watching examples of visual paradigms.
	Eye tracking measurements: record, replay, analyze.
15 min	Discussion & wrap-up