GLANCE: Visual Analytics for Monitoring Glaucoma Progression

Astrid van den Brandt[1], Mark Christopher[4], Linda M. Zangwill[4], Jasmin Rezapour[2,4], Christopher Bowd [4], Sally L. Baxter[3,4], Derek S. Welsbie[4], Andrew Camp[4], Sasan Moghimi[4], Jiun L. Do[4], Robert N. Weinreb[4], Chris C.P. Snijders [1] and Michel A. Westenberg[1]

[1]Eindhoven University of Technology, The Netherlands
[2]University Medical Center Mainz, Department of Ophthalmology, Mainz, Germany
[3]Division of Biomedical Informatics, Department of Medicine, University of California San Diego, La Jolla, CA
[4]Hamilton Glaucoma Center, Viterbi Family Department of Ophthalmology and Shiley Eye Institute University of California San Diego, La Jolla, CA

Supplementary material

Table 1: *Interview guide questions*

Question Nr	Question
Q1	What does your typical workday look like?
Q2	What is your specialization?
Q3	How do you diagnose glaucoma?
Q4	Which functional (and structural) tests do you rely on for patient management?
Q5	What kind of imaging instruments do you work with?
Q6	How do you detect glaucomatous damage?
Q7	How would you describe glaucomatous damage if you only had OCT scans/ fundus images (without VF measurements)?
Q8	Where do you base your diagnosis/decision on?
Q9	Do you see any challenges in reviewing fundus/OCT images? Why?
Q10	If you had more time what existing OCT features would you like to spend time reviewing?
Q11	What OCT features would you put on your wish list?

Table 2: *Pilot user study questions and answer options*

Question	Answer options
What is your advice or recommendation for this patient? Please specify your answer.	[open question]
How confident do you feel about your advice?	Very unconfident - Absolutely confident (5 point likert)
I feel like I can trust the prediction for the 24-2 MD	Totally disagree - Totally agree (5 point likert)
Do you trust the predicted MD for this patient? Why? Please specify your answer.	[open question]
Do you have enough information to assess whether the predicted 24-2 MD is reliable? Why? If not, can you indicate what is missing?	[open question]
What is your gender?	Male / Female / No answer
What is your age?	[nr between 0 and 99]
Years of work experience:	Less than 1 year / Between 1 and 3 years / Between 3 and 5 years / Between 5 and 10 years / More than 10 years
How do you feel about the application of algorithms in your work field?	[open question]
Do you have any questions or comments about the study, or about the tool?	[open question]
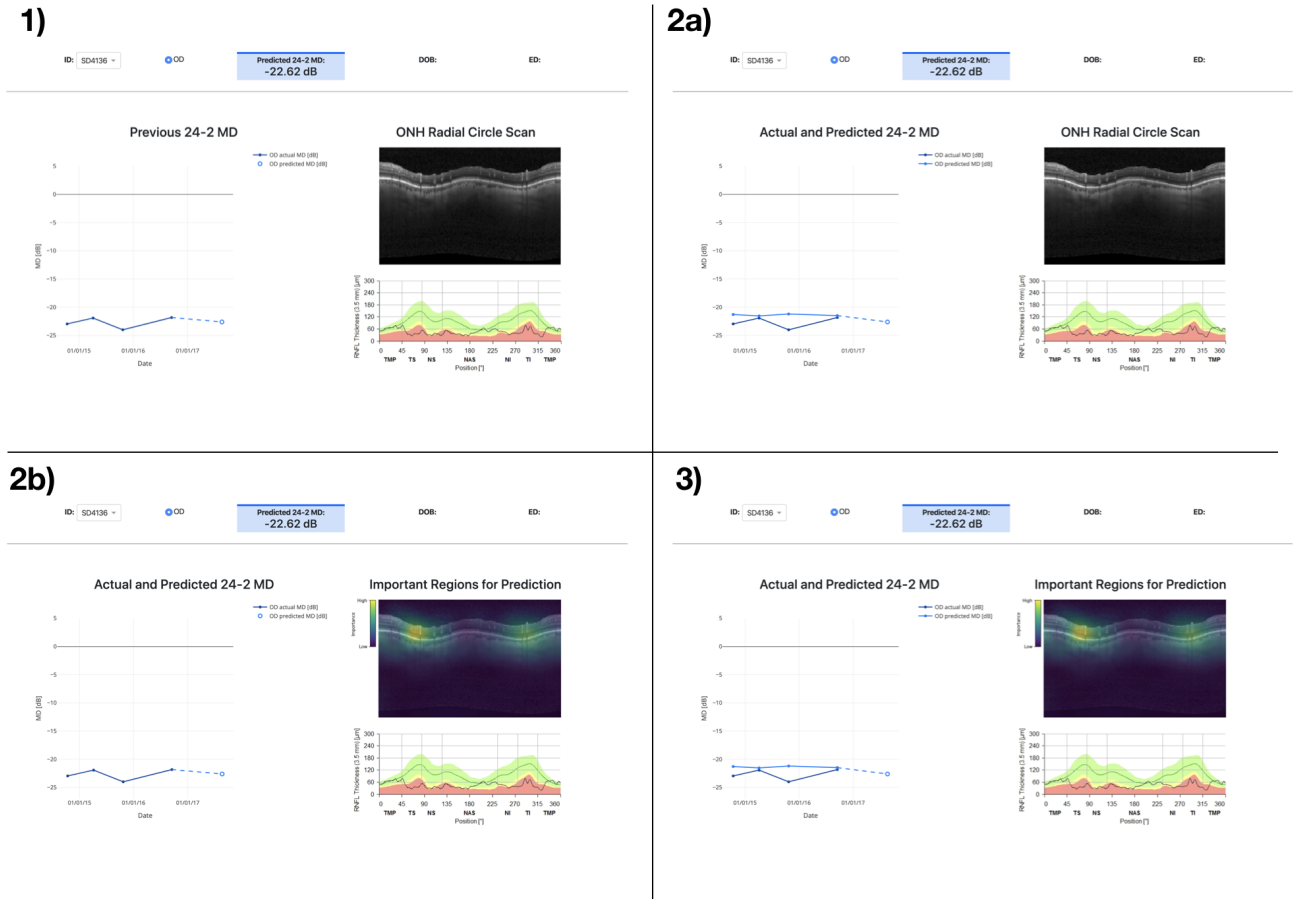
Figure 1: *Variations used in the pilot user study: 1) baseline visualization, 2a) previous predicted MD only, 2b) saliency map only, 3) previous predictions and saliency map.*

Table 3: *Glossary of medical terms*

Abbreviation	Full	Definition
GCIPL	Ganglion Cell-Inner Plexiform Layer	Retinal layer that includes the ganglion cell and inner plexiform layer.
HFA	Humphrey Field Analyzer	A tool for measuring human visual sensitivity and identifying global and localized visual field defects.
IOP	Intraocular Pressure	The fluid pressure inside the eye.
MD	Mean Deviation	An age-adjusted summary value for visual field loss compared to healthy eyes.
OCT	Optical Coherence Tomography	A test using light waves to acquire 3-D retinal images.
ONH	Optic Nerve Head	Circular area in the back of the eye that connects the optic nerve and retina.
RNFL	Retinal Nerve Fiber Layer	Retinal layer formed by the nerve fibers of the optic nerve.
VF	Visual Field	The area in which objects can be seen in the central and peripheral vision.
VFI	Visual Field Index	Global metric that represents the visual field as a single percentage of normal.