Public summary

The question to design a solution for the perimetry test is brought to the attention by Ledengroep Glaucoom, a collective of glaucoma patients across The Netherlands. Ledengroep Glaucoom got a lot of complaints from patients about the perimetry test, this thesis only takes the Humphrey Field Analyser in consideration as that is the most used perimetry test in The Netherlands, and thought that there might be a more patient-friendly alternative. As glaucoma is a disease that can be cured, or at least contained, it is important that it is detected early and monitored multiple times a year to see its progression. The current perimetry test does not give definitive answers about the state of someone's glaucoma as the test is not very comfortable for patients which adds a lot of uncertainty to the results as they are influenced by a lot of outside factors, like the patient's sleep or the comfort during the test. If the perimetry test was more comfortable for the patients, that would probably reduce the amount of uncertainty and give the doctors a better view of the patient's glaucoma and eyesight.

In order to help Ledengroep Glaucoom solve this problem the following main research question is proposed in this thesis: *a. What are the current problems patients have with the perimetry test and b. what are possible viable solutions that amend these problems and give a better patient experience?* To tackle this question it is important to know what different groups think of the perimetry test and what has changed during the development of the Humphrey Field Analyser. Historical analysis is done to understand the history and development of the Humphrey Field Analyser. To understand the different groups a patient survey is held and both a specialist as an operator are interviewed as well as undergoing some personal experience with the Humphrey Field Analyser to get a better understanding of the perimetry test.

After understanding the problem, a list of requirements is compiled and from there, alternatives have been sought that might give a better patient experience while still providing similar, or better, test results as the Humphrey Field Analyser and a design is chosen for further development and testing. In order to further progress this research and help Ledengroep Glaucoom, it is important to look into the further development of the VirtualEye more than trying to improve the design of the Humphrey Field analyser. The potential that the VirtualEye contains is easier to realise with the developments in the current technology regarding, for example, VR glasses. The Humphrey Field Analyser has had an almost identical design since its first development which makes it difficult to rigorously change it as that is needed in order to make it a more comfortable experience for patients.

Working on the development of the VirtualEye in regards to the mounting and the comfort of the glasses itself. Also giving the VirtualEye a stand which can be used in a more traditional setup for people who actually prefer the Humphrey Field Analyser setup will add to the adaptability for different patients.

It is advised to start testing the comfort of different VR glasses and setups with patients and see what are the most liked options. Also, it is important to start designing a stand which can be moved around while adjusting, but also is able to hold the VirtualEye steady during the procedure.