Relating Pupil Dilation to Lighting Conditions in VR

Open Bachelor/Master Thesis

Background

Pupil dilation is an important indicator of different cognitive and affective states of a user. A lot of research has been conducted to recognize and predict certain user states based on pupil size changes, mostly related to cognitive load and strong emotional reactions (e.g. emotion recognition, intent recognition). Most of these user studies were conducted in laboratory settings, however, HMDs with integrated eye trackers provide the opportunity to investigate eye behaviour in mobile, more "real world like" scenarios.

Research Goal

To investigate pupil dilation and its influence factors in real world scenarios it is crucial to be able to recognize those different factors and quantify their influence on pupil size. The strongest influence factor is light. Therefore, the aim of this thesis is to build a model that relates lighting conditions to pupil dilation using a virtual reality (VR) headset, as lighting conditions are easier to control in VR. Depending on bachelor/master level the thesis can be expanded to include more factors.

Teresa Hirzle
Institut für Medieninformatik
O27/3302

teresa.hirzle@uni-ulm.de