

Bachelor's/Master's thesis or other student works at the group of Human Factors Engineering, Chair of Consumer Behavior (D-HEST)

Using flicker fusion frequency measurement to assess fatigue

Fatigue is an important risk factor in safety at work. The early detection of fatigue in workers may help in preventing accidents or a drop in quality of work output. Detecting symptoms of fatigue is a challenge in an occupational environment as methods used for measuring the symptoms must be rapid, reliable and as non-obtrusive as possible. Fatigue alters temporal properties of the central nervous system and therefore the visual perception of a flickering light will change. We are developing an instrument (fig. 1) for recording the flicker frequency threshold below which a light is perceived flickering and above which the light is perceived stable. The instrument is based on the shell of a virtual reality head-set and includes an answering box. Using our instrument, we would like to know, by how much the flicker frequency threshold varies with fatigue of an individual. Also, we would like to learn about the inter-individual variation in flicker frequency threshold.

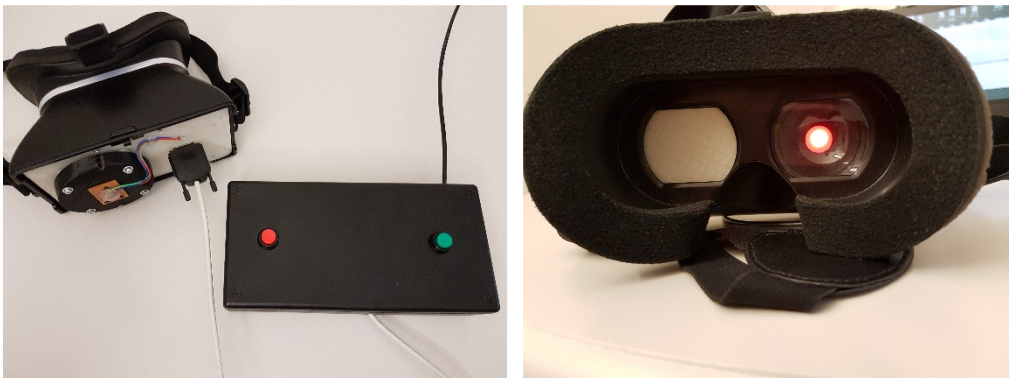


Figure 1: Instrument for recording flicker frequency threshold (front view on the right).

Tasks

The aim of this student work is to test the functionality of our instrument for recording the flicker frequency threshold. For this purpose, flicker frequency is recorded in a group of individuals. In parallel, individuals' fatigue is recorded with a standardized fatigue questionnaire. Questionnaire data and flicker threshold data are then correlated. Your tasks are:

- Familiarize with the instrument and with some previous work (master thesis) on the topic
- Design the experiment for testing the functionality
- Collect, analyze and discuss the data
- Report findings in a written report and in an oral presentation

Requirements

- Interest in Human Factors research
- Organizational skills
- Have basic skills in statistics or willing to learn such skills

Support and contacts

The Human Factors Engineering group can provide a broad interdisciplinary technical and scientific support and has a solid experience in the many disciplines required to run the project. For further information please contact: mmenozzi@ethz.ch or rosandro@ethz.ch, or call: phone 044 632 39 81 (M. Menozzi).