Novel ways of measuring workload in Virtual Reality

Maggie Ugelstad[1], Uwe Gruenefeld[2], Tim Claudius Stratmann[2], Susanne Boll[3]
[1]Wellesley College, [2]OFFIS, [3]University of Oldenburg

Problem

NASA-TLX questionnaire is based on a subjective assessment of the perceived workload.

Approach

Measure workload using Virtual Reality, Heart Rate Sensors, and an Electroencephalogram.

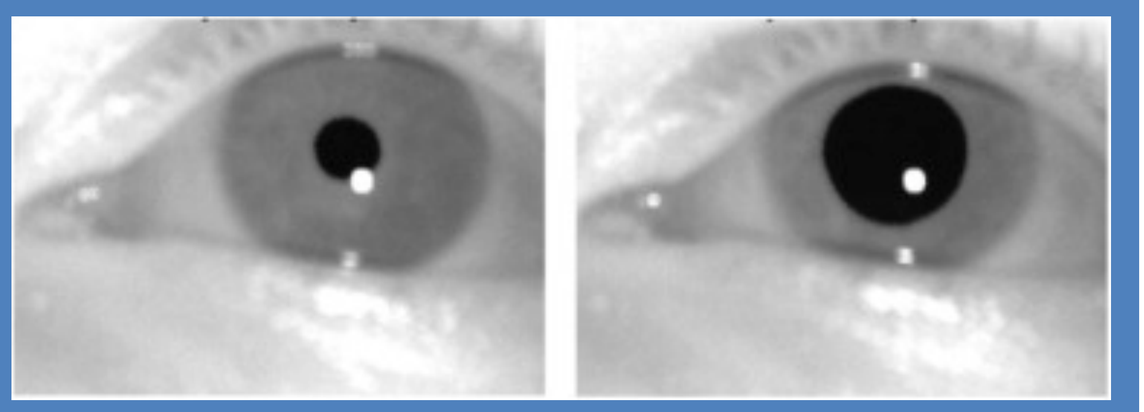
Evaluation

Compare which methods works best to measure the workload of participants.

NASA-TLX

- Mental Demand
- Physical Demand
- Temporal Demand
- Performance
- Effort
- Frustration

Pupil Diameter



Measuring pupil diameter during tasks with an **eye tracker** and **image recognition** software.

HARDWARE

Measures **mental workload** by tracking changes in pupil diameter and latency between saccades.

Measures **frustration** through voltage changes from ionic current within and between neurons.

Users interact with scenes in **Virtual Reality.**

CARL VON OSSIETZKY universität OLDENBURG

Contact
Maggie Ugelstad mugelsta@wellesley.edu

This work is partially funded by NSF CMMI grant #1840085