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DTU Management
Department of Technology, Management and Economics

Eye-tracking based Fatigue and Cognitive Assessment

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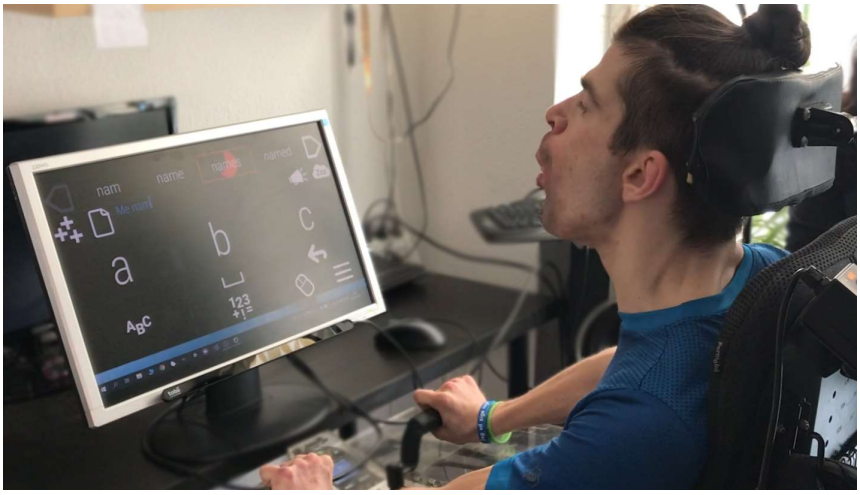
Relevance – challenges, problem or opportunity?

Fatigue can be a disabling symptom in neurological disorders like cerebral palsy, muscular dystrophy, amyotrophic lateral sclerosis. Fatigue can affect aspects of life other than just health, like emotions, productivity and social behavior and result in additional reduction in attention, cognitive processing power, reaction times and task performance. Moreover, for people with neurological disorders who use alternate means like eye-tracking for communication, onset of fatigue can imply a halt in communication.



Conceptual model/theory

Fatigue is a composite concept. It is closely inter-correlated with cognitive load, attention and task performance. Hence, it is important to assess all aspects of fatigue. The idea is to induce cognitive load, and study the fatigue levels using subjective questionnaires and attention tests before and after the experiment. Since the first use-case in this project is people with neurological disorders, and monitoring fatigue when they are using their communication system, the experiments will be based around the task of gaze-typing.

Method

Here are the five stages of the project, defined by five experiments:

1. Assess gaze-typing as a task to induce cognitive load.
2. Cognitive load measurement on a large scale and exploration of fatigue
3. Pilot study with people with neurological disorders to explore the experiment boundaries
4. Inclusion of attention tests in the experiment protocol
5. Real-time detection of fatigue
6. Longitudinal study with people with neurological disorders

Expected results

The research is expected to contribute with insights into micro-fatigue with empirical evidence into the relation between eye based features and fatigue during eye-typing.

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BEVICA FONDEN

Find out more about the project:

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