

Master 2011

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Analysis and Processing of Data Related to Fine Finger Forces and Eye Movement Visualizations

ABSTRACT - Masterthesis

The project is about building software and interface development for acquisition of different kind of experimental data. The behavioural experiments involved in are intended to investigate the cognitive control of fine finger forces and eye movements and their interaction when performed at the same time. This requires the synchronized acquisition of analog force and eye movement data and their physical to electrical transformation for further analyzing. Data would be analyzed statistically as well as dynamically, while measuring the resulting force for further processing and applications.

Simultaneously here, data acquisition for the different type of data has to be controlled through the interfacing of programs and task for the participants have to be visualized. Various system devices (National Instruments, ATI Force Transducer, Eye tracker) and programs (LabView, C, Matlab, Experiment Builder) are used for data acquisition of different type and analyzing the data. The data is further signalized to be processed for its visual aspect and can be used for various applications in behavioural sciences as well as robotic field and in injury rehabilitation.

Here the task is to evaluate in close cooperation with our experimenters the advantages and disadvantages of the existing solutions, the potentials of the available software and hardware components and based on this evaluation to develop a new and fitting solution that is appropriate for our experimental setting and user friendly so that it can be used without any further support. This kind of solution can be potential (commercial or not) for use not just limited to our research group but also for other researchers working in this field.