Invitation to PhD Defense
by Jeppe Veirum Larsen
Friday 5. November 2021

Title:
The Actuated Guitar: Investigating how limited expressiveness and latency of a foot pedal/actuator affects one-handed playing of an electrical guitar for hemiplegics

Sign Up & Questions:
If you wish to participate in the defense, reception or both, please sign up via this link: (Doodle link)
To pose questions regarding the PhD defense, please contact Moderator Matthias Rehm.

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Assessment Committee:
Associate Professor Sofia Dahl (Chairwoman)
Department of Architecture, Design & Media Technology, Aalborg University, Denmark

Professor Alexander Refsum Jensenius
University of Oslo, Norway

Associate Professor Thomas Sokoler
IT University of Copenhagen, Denmark

Supervisors:
PhD Supervisor Professor Thomas B. Moeslund
Department of Architecture, Design & Media Technology, Aalborg University, Denmark

Assistant PhD Supervisors: Associate Professor Hendrik Knoche and Associate Professor Dan Overholt
Department of Architecture, Design & Media Technology, Aalborg University, Denmark

Program for PhD defense:
11.00 – 11.05 Moderator Mathias Rehm welcomes the guests
11.05 – 11.50 Presentation by PhD student Jeppe Veirum Larsen, room 3.565
11.50 – 12.30 Lunch and Coffee Break
12.30 – 14.30 Questions
14.30 – 15.00 Assessment
15.00 Announcement from the committee and Reception for Jeppe V. Larsen, room 5.355
Abstract:

With a growing number of stroke patients anticipated as the elderly population increases worldwide, the costs of stroke rehabilitation will also rise in the coming years. Successful self-rehabilitation at home is important for keeping those costs down, and sustaining a patient's motivation is crucial to the success of self-rehabilitation. The use of musical instruments in self-rehabilitation is beneficial for stroke patients, and the use of existing musical instruments removes the risk of stigmatization and likely increase uptake.

This thesis focuses on how limited musical expression and high latency might affect long-term motivation related to self-rehabilitation at home through the use of modified existing musical instruments. The investigation includes the use of a modified electrical guitar in both supervised and unsupervised settings by hemiplegic users with either inherent (spastic) or acquired brain damage (stroke) as well as by those with no brain damage in a supervised setting.

The thesis starts by introducing HCI in the context of rehabilitation after brain damage and how music can contribute to rehabilitation. This is followed by a presentation of the areas within assistive technology and musical expression, the existing literature in the area, and the three iterations of the modified electrical guitar (The Actuated Guitar). As a contribution to the research area, the thesis also presents seven papers within the area of interfaces for musical expression.