Towards electronic digital music practice for neurodiverse people

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ABSTRACT

This paper gives an overview on the DEIND project which aims to connect neurodiverse people with the field of contemporary electronic and digital music practice. In pursuit of this, people with autistic spectrum disorders are invited to take part in the design process of electronic instruments.

To facilitate music practice, we aim for a holistic instrument experience rather than a modular approach in which the underlying modules of electronic instruments may become too evident and possibly confuse the player too much.

The close integration of target group members encourages a bilateral learning process: on the one hand, there is an intense and fruitful experience for the participants developing, on the other hand, involved researchers will identify design challenges specific to the target group yet very likely reveal new perspectives on the broader view of their respective area of research.

1. INTRODUCTION

The overarching theme of this project is to connect autistics with the field of contemporary electronic and digital music practice. In pursuit of this, people with autistic spectrum disorders (associated with our partner organisations *Nuorten YstÃd'vÂd't* and *Resonaari Music School*) are invited to take part in the design process of electronic instruments. The close integration of target group members ensures on the one hand an intense and fruitful experience for them, on the other hand, it opens the opportunity for the involved researchers to identify challenges that are specific to this group yet reveal new perspectives on the broader view of their research area.

Due to its nature, this investigation is laid out in an interdisciplinary manner, interweaving aspects of research in fields as diverse as interaction design, product design, new instruments for musical expression (NIME), music therapy, sound synthesis and computer science. With the current in-house partners (involved are *Department of Media*, *Department of Design* and *Department of Signal Processing and Acoustics*) as well as our external partners (*Nuorten YstÃd'vÃd't* and *Special Music Centre Resonaari*), we cover most of those areas, but plan to extend the list of partners on an international level (e.g. in Germany, the Netherlands and Australia) over the course of the starting grant.

In order to get this larger project started, we hereby apply for support from Aalto Media Factory for the initial phase of the project in the form of infrastructure, expertise and financing. With its help, an initial design iteration will be carried out in which instrument prototypes based on electronically enhanced textiles will be developed. Alongside, we aim for attending and organising public events as well as publications in international journals and conference proceedings. Additionally, the grant will help to form groundwork for a large-scale research application, possibly on an EU level, involving a collaboration network of international project partners.

2. PROJECT OUTLINE AND DESIGN CYCLE

Here, we talk about the members of the group and which skills they contribute. Also, the design cycle is introduced and explained.

3. FIRST ITERATION

In which we give an overview about the first design iteration.

3.1 initial workshop

Tells that we had a kick-off meeting with all contributing members followed by a one-day trip to our project partner Nuorten YstÃd'vÃd't in Imatra. This was followed by an initial workshop day at which we discussed arising challenges (tell which!).

We came up with possible ideas for the system design (give examples for the prototype ideas and why they were considered).

3.2 instrument prototyping

We decided to develop two of the many ideas further, namely he rhythmical interaction part and the idea on room modes.

3.2.1 audio prototyping

Reports on the two to seventeen audio prototypes we did: the ambient system (complexRes), the FM matrix, the autoLoopPointer, the diodeRing, the noiseRing

3.3 sensor prototyping

reports on the different sensors we looked at, e.g. switchDesigns (floor plan, imatra map)

3.3.1 interface prototyping

Mentions (again) that we're focusing mainly on textile-based interfaces. Why is that so? We have some knowledge and want to extent it. Because textiles are nice to touch, give a lot of haptic feedback and are easily accepted (when showing the prototypes to people, they immediately grasp for them and hug them. Happened for real!) We did an initial interface design with *conductive fur*. We describe conductive fur, how we anticipated its usage, how it feels and how it works. We as well give sound examples on how it sounds with and without added effects.

3.4 field trip

We tell about the first field trip top Imatra and what happened there, namely five days of intense listening sessions. We further explain the general day layout and that we tried to fit our interventions into it. Also quite important is that we actually wanted to keep the fun factor in the equation: it should not be difficult, no heavy learning process should be involved. Why? Because the goal of the project is music practice not music therapy or learning.

The people there are different. Different in the sense that they value other things than I expect from someone on the street.

3.4.1 general impressions made on the field trip

look at notes made in Imatra and report those as general observations.

3.5 data analysis

describe what can be observed in the video session with participant 1 (rhythmical patterns).

3.6 lessons learned

oh my. so many.

4. CONCLUSION AND OUTLOOK

5. ACKNOWLEDGMENTS

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