

Music, Computing, and Health

4 – 8 March 2019 @ Oort

The Science:

Our workshop on 'Music, Computing, and Health' aimed to consider interdisciplinary approaches to developing music technology for well-being and healthcare, drawing from a diverse set of disciplines. More specifically, we explored how state-of-the-art technology, machine learning, and computing could be used to develop novel, music-based applications for healthcare and therapeutic interventions. By bringing together researchers from music psychology and neuroscience, medical technology (medtech), music technology, music information retrieval, healthcare and music therapy, we enabled participants to find common ground by exploring the state of the art as well as the big challenges in each field, in the context of identifying the potential of music-based technologies for health applications.

Tangible outcomes of the workshop:

The workshop was a great success in terms of facilitating discussion between researchers, therapists, and clinicians with very diverse, interdisciplinary backgrounds and methods (medicine, machine learning, music therapy, motion capture technology, etc). During the workshop, participants had the opportunity to give/hear talks on cutting-edge research from a variety of different topics (e.g., motion capture technology for motor rehabilitation; music technology for communication disorders, etc), and they participated daily in self-selected working groups (we facilitated working group topic ideation, e.g., participants helped create working group topics and voted on the topics of greatest interest). In these groups, participants shared their different perspectives, brainstormed on theoretical approaches and computational applications, and generally explored how the different disciplines represented can work together to create exciting and effective new evidence-based music-based technology for healthcare.

Based on the above experiences, we are currently working on two tangible outcomes of the workshop: A conference report of the workshop, which will provide an overview of the week; and a roadmap document highlighting existing applications as well as new areas in which music technologies can be applied to improve health and well-being. Both documents will be published in an academic journal.

There was a clear realization of taking for granted reductionist (MIR/computing) vs holistic (music therapy) approaches that are typical for different research fields (also relating to computational/quantitative and qualitative methods, respectively). Furthermore, different goals were identified for different fields, such as developing technology, analyzing data vs patient-based outcome measures. Additionally, a shared vocabulary was sought to facilitate interaction. Each of these elements greatly increases the potential for collaborations, and this was a common topic of discussion.

We identified the substantial importance of timing/temporal structures in all kinds of different therapy contexts employing music, which might be connected to an active research area in MIR on extracting and describing temporal structures in music. Another "Aha" moment was to link these temporal structures to other measures (biomarkers) in order to investigate meaningful moments observed in music therapy. Additionally, the importance of interaction in the therapy context was noted, which might stimulate new directions in MIR-based interactive systems.

We structured the workshop such that there were lectures in the mornings (we tried to make sure that an interdisciplinary set of fields were represented in talks every day), and time was allocated for working groups to meet in the afternoons (after which, each group reported back to the entire group at the end of the day). We thought the program worked quite well: the format was varied enough to

keep everyone's attention, and people were not overwhelmed by either too many talks, or too much discussion time. Furthermore, we were complimented on the coffee breaks and long lunch breaks; participants stated that "many interesting conversations" and research ideation happened during these less formal periods.

We would simply like to take the opportunity to express our profound thanks once again to the Lorentz Center for making this wonderful workshop a reality - Thank You!!

Kat Agres (Singapore, Singapore)

Susan van Hooren (Heerlen, The Netherlands)

Rebecca Schaefer (Leiden, The Netherlands)

Anja Volk (Utrecht, The Netherlands)