

Magister-/Master-/Diplomarbeit

Mapping Motion to Music

Maes, Leman, Palmer and Wanderley (2014) claim that the musical mind is highly embodied, i.e. that the listener's musical mind (attention, intention, mood, feeling, etc.) can be accessed through body movement, without the need for symbolic representations like language or musical scores (Maes et al., 2014). Listeners internally mimic body movements when perceiving music and its emotional or intended qualities (Grahn and Rowe 2009, Zatorre et al. 2007). Hence, the body is an active contributor in meaning formation. Thus, a valid and innovative approach to retrieve and recommend music could be to query it in a corporeal way (Leman 2008, Irrgang and Egermann 2016). The aim of this Master Thesis is to evaluate how movement, measured with an OPTICAM Motion Tracking System, relates to musical qualities. The candidate cleans MoCap data and extracts suitable motion features as predictors for musical features. Furthermore, the quality of prediction will be assessed.

The thesis is affiliated to the project *From Motion to Music: Towards Integrating Embodied Music Cognition into Music Recommender Systems*. It will contribute further insights into the scope of an embodied approach and contrast the performance of MoCap to typical smartphone inherent sensors.

References

- Grahn, J. A., and Rowe, J. B. Feeling the beat: premotor and striatal interactions in musicians and non-musicians during beat perception. *Journal of Neuroscience* 29 (2009), 7540–7548.
- Irrgang, M. & Egermann, H. (2016). From Motion to Emotion: Accelerometer Data Predict Subjective Experience of Music. *PLoS ONE*, 11(7): e0154360. doi: 10.1371/journal.pone.0154360
- Leman M. *Embodied Music Cognition and Mediation Technology*. London: MIT Press; 2008.
- Maes, P.-J., Leman, M., Palmer, C., and Wanderley, M. Action-Based effects on Music Perception. *frontiers in Psychology* 4 (2014).
- Zatorre, R. J., Chen, J. L., and Penhune, V. When the brain plays music: auditory-motor interactions in music perception and production. *Nat. Rev. Neurosci.* 8 (2007), 547–558.

Prerequisites

Knowledge of Audio Content Analysis (MIRToolbox or similar) and Statistics (SPSS or similar); interest in working with the MoCapToolbox; interest in embodied cognition.

Advisors

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