

## Magister-/Master-/Diplomarbeit

### Mapping Motion to Music

Maes et al. (2014) claim that the musical mind is highly embodied. That means that the “listeners’ musical mind (attention, intention, mood, feeling, etc.) can be accessed through body movement, without the need for symbolic representations like language or musical scores” (ibid., p.1). According to Grahn and Rowe (2009), listeners internally mimic body movements when perceiving music and its emotional or intended qualities. 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 & Egermann, 2016).

The aim of this master thesis is thus to evaluate how movement (assessed by the Motion Capture System *Optitrack*) can be related to musical qualities. The candidate will clean Motion Capture data and extract suitable motion features as predictors for musical properties assessed by expert ratings. 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 Motion Capture to typical smartphone-inherent sensors.

#### References

Grahn, J. A., & Rowe, J. B. (2009). Feeling the beat: premotor and striatal interactions in musicians and non-musicians during beat perception. *Journal of Neuroscience*, 29 (23), 7540-7548.

Irrgang, M. & Egermann, H. (2016). From Motion to Emotion: Accelerometer Data Predict Subjective Experience of Music. *PLoS ONE*, 11(7), e0154360.

Leman, M. (2008). *Embodied Music Cognition and Mediation Technology*. London: MIT Press.

Maes, P. J., Leman, M., Palmer, C., & Wanderley, M. (2014). Action-based effects on music perception. *Frontiers in Psychology*, 4, 1008.

Zatorre, R. J., Chen, J. L., & Penhune, V. B. (2007). When the brain plays music: auditory–motor interactions in music perception and production. *Nature Reviews Neuroscience*, 8(7), 547-558.

#### Prerequisites

Knowledge of Statistics (SPSS/R or similar); interest in embodied music cognition.

#### Advisors

Melanie Irrgang, [melanie.irrgang@tu-berlin.de](mailto:melanie.irrgang@tu-berlin.de)

Dr. Jochen Steffens, [jochen.steffens@tu-berlin.de](mailto:jochen.steffens@tu-berlin.de)

Prof. Dr. Stefan Weinzierl, EN 322, [stefan.weinzierl@tu-berlin.de](mailto:stefan.weinzierl@tu-berlin.de)