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Appendix C: Stellingen (Propositions)

Attached to the thesis
“Computed fingertip touch for the instrumental control of musical sound
with an excursion on the computed retinal afterimage”.

I. Computation has a unique and central role to play in the development of how humans make music (Introduction and Chapter 1).

II. The question as to what forms of instrumental control of musical sound are possible to implement is fundamental to the future development of (digital) musical instruments (Introduction and Chapter 1).

III. The technical concept of computational liberation demonstrably can be used as a tool to obtain an ever more complete answer to this fundamental question (Chapter 4).

IV. When developing transducers and algorithms, fingertip use, and more specifically, unidirectional fingertip movement orthogonal to a surface should be prioritized as an area for investigation (Chapters 2 and 3).

V. The results presented in [Higham et al. 2012] can be interpreted as evidence for how very ancient the presence of this type of fingertip movement is in the instrumental control of musical sound.

VI. The 6 DOF magnetic levitation device designed by Hollis that is used with the human fingerpad by Grieve et al. in [Grieve et al. 2009] is part of a development in haptic transducer technology (also exemplified by the CT system in this Thesis) that can be usefully characterized as the avoidance of connected mechanical parts moving relative to the target anatomical site.

VII. Technologies such as T-PaD [Winfield et al. 2007] and TeslaTouch [Bau et al. 2010] can deliver subtle touch display during control, but to more completely explore new types of fingertip control actions on frictional surfaces, a larger force output range (as exemplified by the KSFT system in this Thesis) is essential.

VIII. The fingertip input of successive iterations of consumer computing devices may well be adopted for the control of musical sound, as for example happens in the Mobile Music Toolkit of [Bryan et al. 2010], but this should never replace developing new transducer technologies from scratch.

IX. Repeated and varying pressing movements on the already held-down key of a computer keyboard can be used both to simplify existing user interactions and to implement new ones, that allow the rapid yet detailed navigation of multiple possible interaction outcomes (Chapter 5).

X. Automated computational techniques can display shape specifically in the retinal afterimage (Chapter 6).