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Moving in Harmony: The Use of Spatial Metaphor and Whole-Body Interaction to Reframe Harmonic Tasks

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Background

Harmony is a demanding part of music theory. Pre-requisites typically include polyphonic instrumental skills and theoretical knowledge. Consequently, Harmonic skills are usually taught relatively late. To make learning about harmony more accessible for novices, while also offering new insights for experts, we have developed a physical computing system which systematically reframes harmonic tasks as spatial and navigational tasks focusing on two and three dimensional shapes, paths and relationships. Musical tasks are carried out by physical enactment. The system design employs whole body interaction to encourage beginners to re-appropriate low level spatial and navigational skills to carry out a wide range of harmonic tasks.

Research questions

How can spatial metaphors support principled learning about tonal harmony?
How can whole-body interaction be used to carry out intricate harmonic tasks?

Aims

Support and enrich learning about tonal harmony by the principled re-appropriation of existing spatial and navigational skills.

Summary of content

Song Walker Harmony Space allows beginners to gain experience of playing, and composing and analysing complex harmonic sequences. Theories of music perception and embodied cognition are used to reframe harmonic tasks spatially. Whole-body interaction are used to encourage beginners to re-appropriate existing spatial and navigational skills to physically enact a wide range of harmonic tasks, in small collaborative groups, using electronic dance mats, wiimotes and a large-scale projection system. To guide learners in making effective use of the system, we have developed exercise materials addressing diverse musical tasks.

Significance

From evaluation studies with participants ranging from novices to expert musicologists, we found that the system allows beginners to rapidly learn to carry out relatively complex musical tasks while facilitating explicit communication about tonal harmony in new and useful ways.

Audio-Visual Equipment and other Requirements

A demonstration of Harmony Space Song Walker requires at least one projector (preferably two) with VGA or HDMI adapter. In addition, we will bring 1-3 electronic Dance Mats, 1-3 Wiimotes, and 1-3 Wii nunchuks, and 1-3 foot controllers, depending on the number of players.