Keynote Speech: Human/Technology Interface and Interactivity

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Abstract: Most traditional performances, such as music and dance, involve some forms of human body movements. Effective body posture, gesture and control for musical performance impact upon many important factors for the performer and the performance. Among the many challenges, it requires knowledge, time, care, dedication and focus to learn gesture related controls and techniques, and to progress from "knowing" what to do, into "doing" it, and to transform "doing" into an expressive performance with a high degree of control, repeatability and consistency with confidence.

This keynote discusses multimodal sensing to understand performance motion, and interactive interface to support various aforementioned aspects of musical learning with specific pedagogical scenarios. It presents several selected projects from the Interdisciplinary Centre for Scientific Research in Music (ICSRiM, www.icsrim.org.uk) at the University of Leeds. Starting from our early interests in the relationship between music and motion (http://news.bbc.co.uk/1/hi/technology/3873481.stm), this presentation introduces a range of research on gesture visualisation and sonification, augmenting performance/learning spaces with motion analysis technologies to study performance gesture and to provide multimodal feedback in order to support different learning processes. These include the i-Maestro project focusing on string instrument and a series of conducting interface projects exploring different aspect of gesture controls.

With the findings from gestural analysis, this talk discusses explorations on musical instrument interfaces and augmentation, with user-centred design to enhance interactivities and expressivities, using the design of an interactive rock instrument from the Ruskin Rock project, as a case study (http://www.guardian.co.uk/music/2010/aug/18/stone-xylophone-evelyn-glennie).

The talk also presents latest research collaborations and activities, with the University of Leeds Cultural and Creative Industries (CCI) Exchange hub, to further understanding of interaction and intelligent interfaces in the performing arts through collaboration between science, arts and technology, to develop shared aims and far-reaching impacts.

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