

Designing Interaction for Computer Musicians

Chris Kiefer

University of Sussex, Brighton, UK

C.Kiefer@sussex.ac.uk

1 Introduction

In the world of computer music, interactivity is becoming an increasingly active area of interest. In their roadmap for future computer music research, Serra et. al. [5] emphasise interactivity and controllability as an area that the next generation of research needs to focus on, and there has arguably been a shift within the computer music community from the search for new sound synthesis techniques towards a search for new ways of controlling sound synthesis.

Well designed interactivity is an important component of a computer music system; interaction problems can inhibit a musician's creative process and interrupt flow [1] in performance. My area of research is to examine interaction between musicians and computer systems, and to look at ways in which interactivity can be designed to enable a better musical experience for the user. Although my research to date has not covered shared interaction, it's extremely likely that it will in the future; playing music is at the core a social activity and collaborative control of digital music opens up new possibilities which need to be considered under my research theme.

In this paper I'll outline my research so far, and look at how collaborative control could be an important part of the next steps.

2 Evaluating the Wiimote as a Musical Controller

Evaluation is a fundamental part of an effective design process; HCI provides methodology

for evaluation, although there has only been a small amount of research into how usability techniques might be employed to evaluate musical controllers. I recently ran an experiment to evaluate Nintendo's Wiimote as a musical controller, with the additional aim of assessing the extent to which current HCI techniques would be useful for the evaluation. The study provided some valuable insights into the use of the Wiimote for music [3], and also highlighted some deficiencies with current HCI techniques [4] with respect to some of the difficult challenges present in evaluating musical instruments.

3 Control of Music Software with Hand Movements

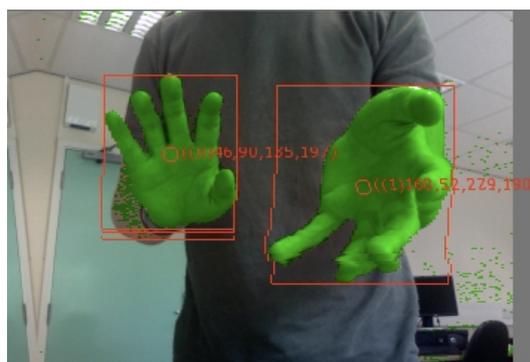


Figure 1: Hand Tracking Software

I'm currently investigating how different interfaces that go beyond the mouse and keyboard might be employed to help improve musi-

cal interaction. At the moment, I'm looking at the potential of hand motion for controlling music software; the image in figure 1 shows a hand gesture recognition system. Currently in the alpha stage, it uses a combination of computer vision and artificial intelligence techniques to track hand motion and recognise hand position. This system will soon be connected up to control a sound editing package.

4 Surveying Musicians Relationships With Their Software

I'm in the process of running an exploratory study to examine the relationship between computer musicians and the interfaces they use. Through a combination of interviews and cultural probes I hope to obtain a clearer picture of the way musicians currently interact with computers to create music and how they would like to do so in the future. The scope of this study will include collaborative work.

5 Conclusion

While shared experience is one of the fundamental qualities of music, with a few exceptions such as Reactable [2], many computer music systems have little facility for collaborative control. This is especially true of design and composition environments such as Max/MSP and Digital Audio Workstations such as Cubase which are aimed at single user mouse and keyboard control. Given that my research theme is to look at possibilities for control that improve musical interaction, and given the importance of shared experience in music, then collaborative interfaces could provide some valuable potential for my research; the experience gained from the workshop will help to shape the next phase of the project.

References

- [1] Andreas Burzik. Go with the flow. *The Strad*, 2003.
- [2] Sergi Jordà, Günter Geiger, Marcos Alonso, and Martin Kaltenbrunner. The reactable: exploring the synergy between live music performance and tabletop tangible interfaces. In *TEI '07: Proceedings of the 1st international conference on Tangible and embedded interaction*, pages 139–146, New York, NY, USA, 2007. ACM.
- [3] Chris Kiefer, Nick Collins, and Geraldine Fitzpatrick. Evaluating the wiimote as a musical controller. In *Proceedings of the International Computer Music Conference*, 2008.
- [4] Chris Kiefer, Nick Collins, and Geraldine Fitzpatrick. Hci methodology for evaluating musical controllers: A case study. In *Proceedings of New Interfaces for Musical Expression*, 2008.
- [5] X. Serra, G. Widmer, and M. Leman. *A Roadmap for Sound and Music Computing*. The S2S Consortium, 2007.