

# Music and HCI Workshop

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## Abstract

Music is an evolutionarily deep-rooted, abstract, real-time, complex, non-verbal, social activity. Consequently, interaction design in music can be a valuable source of challenges and new ideas for HCI. This workshop will reflect on the latest research in Music and HCI (Music Interaction for short), with the aim of strengthening the dialogue between the Music Interaction community and the wider HCI community. We will explore recent ideas from Music Interaction that may contribute new perspectives to general HCI practice, and conversely, recent HCI research in non-musical domains with implications for Music Interaction. We will also identify any concerns of Music Interaction that may require unique approaches. Contributors engaged in research in any area of Music Interaction or HCI who would like to contribute to a sustained widening of the dialogue between the distinctive concerns of the Music Interaction community and the wider HCI community will be welcome.

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Interaction design; interactivity; music; embodiment; physicality; gesture; evaluation; creativity; music computing; computer-human interaction; human-computer interaction.

**ACM Classification Keywords**

H.5.2. Information interfaces and presentation (e.g., HCI): User Interfaces: Theory and methods.

**Background**

Because of the demanding, abstract, social, non-verbal nature of music, interaction design in music can be a valuable source of challenges and new ideas for HCI. Reflecting music's role as an evolutionarily deep-rooted, real-time, complex social activity, interaction design in music can make unusual demands, which can lead to inspirational or novel solutions of wider relevance to mainstream HCI.

Musical disciplines have their own longstanding traditions in the design of interactive systems - consequently, while Music Interaction has great commonality with HCI, there are valuable differences in perspective to be explored to the benefit of both communities [12]. There is an active research community in Music and HCI. Recent evidence includes a CHI Panel in 2012 [19] with an emphasis on design for music consumption, a CHI SIG in 2013 [2], and a CHI course on Creating Musical Interfaces in 2015 [20]. A particular focus for such research can be found in the New Interfaces For Musical Expression Conference that developed out of a 2001 CHI workshop of the same name [25]. However, the focus of this community is generally and justifiably on specifically musical ends, rather than encouraging reflection on implications for the wider field of HCI. This lacuna creates a significant opportunity for a CHI

workshop to make distinctive contributions both to the HCI and to the Music Interaction research communities.

**Issues to be Addressed**

Candidate issues for consideration during the workshop include:

- What is the relationship between creative practice and Music Interaction design [8, 15, 26], and how does this differ from other open-ended creative domains [12]?
- How does the relationship between a performer and a digital musical instrument differ from more familiar human-computer relationships [17]?
- What are the roles of surprise, playfulness, complexity and difficulty in designing for creative interactions in music, [10, 17, 21] and in the broader domain of interaction design [5, 13]?
- What can Music Interaction teach HCI about physicality and embodiment [29, 7, 22, 11]?
- What lessons can be learned for HCI from musical performativity and spectatorship [26, 9]?
- How can Music Interaction be usefully evaluated, and are there lessons from evaluation in Music Interaction for HCI more generally [4, 16, 18, 24]?
- What lessons can be learned in interaction generally from interfaces for musical rhythm [6, 24]?
- What is the role of parameter mapping in the effectiveness of expressive musical interfaces [14, 28]?
- What challenges do hacking, appropriation and maker-culture raise for Music Interaction [30]?
- What can collaborative music making teach us about interaction in collaborative settings [1, 3]?

### Workshop Goals

The goals for the workshop are as follows.

- To explore new and emerging ideas and practices from Music Interaction and to investigate how these relate and could contribute to existing HCI practices.
- To identify new ideas in HCI that could address outstanding problems in Music Interaction.
- To characterize aspects of Music Interaction that may require approaches distinctively different from mainstream HCI, and the reasons for such differences.
- To explore cutting edge research on any aspect of Music Interaction and reflect on its implications for interaction design more generally.

Follow-up goals for the workshop include the publication of a collection of revised and extended submissions as papers in a journal special issue or book. See the section 'Post-Workshop Plans' below for details.

### Organisers

**Simon Holland** is founder and Director of the Music Computing Lab at the Open University. He was lead editor of the 2013 book "Music and Human Computer Interaction". He has devised numerous innovations in Human Computer Interaction, including the Haptic Bracelets, the Haptic Drum Kit, AudioGPS, Harmony Space and Direct Combination. He has pioneered new approaches to stroke rehabilitation derived from his research into learning musical rhythms.

**Andrew McPherson** is a Senior Lecturer (Associate Professor) in the Centre for Digital Music at Queen Mary University of London. A composer and electrical engineer by training, his research focuses on augmented instruments which build on the expertise of trained musicians, the study of performer-instrument interaction, and high-performance embedded audio processing systems.

**Wendy MacKay** is a Research Director at INRIA Saclay – Île-de-France where she founded and directs the In|Situ| research group in Human-Computer Interaction. Formerly Vice President of Research for the Computer Science Department at the University of Paris-Sud, after a two-year sabbatical at Stanford she chaired CHI 2013 in Paris. Her research interests include multi-disciplinary, participatory design methods, tangible computing, interactive paper, and situated interaction.

**Marcelo M. Wanderley** is William Dawson Scholar and Professor of Music Technology at McGill University, Canada. His work made early contributions to several Music Interaction topics such as the evaluation of musical interfaces, mapping and the quantification of movement in performance. He co-edited the electronic book "Trends in Gestural Control of Music", 2000, co-authored the textbook "New Digital Musical Instruments: Control and Interaction Beyond the Keyboard", 2006 and chaired NIME 2003.

**Michael Gurevich** is Assistant Professor of Performing Arts Technology at the University of Michigan. His research explores new aesthetic and interactional possibilities that can emerge in performance with real-time computer systems. He addresses the same issues

in his creative practice, through experimental compositions involving interactive media, sound installations, and the design of new musical interfaces.

**Tom Mudd** is a doctoral researcher at The Open University and an associate lecturer at Goldsmiths, University of London. His research interests focus on relationships between software, composition and improvisation, and in particular the role of nonlinear dynamics in interactions with musical tools.

**Sile O'Modhrain** is Associate Professor of Performing Arts Technology at the University of Michigan. Her research focuses on human-computer interaction, especially interfaces incorporating haptic and auditory feedback. Her work emphasizes an embodied approach to interaction design in which central consideration is given to the relationship between perception and action as part of the design process.

**Katie Wilkie** devised pioneering methodologies in her doctoral research at the Open University for the identification of conceptual metaphors and image schemas in Music Interaction design. She demonstrated how such analyses could be used to critique and improve existing designs, and in the design of novel musical interfaces. She now pursues new applications of Embodied Cognition in Music Interaction.

**Joseph Malloch** is the creator of numerous digital musical instruments and interfaces, several of which have been performed around the world at new music festivals and international conferences. He is currently a postdoctoral researcher at Inria and LRI, Université Paris-Sud/CNRS, Université Paris Saclay, focusing on tools and methods for enriching human-

computer interaction and supporting collaborative design of interactive systems.

**Jérémie Garcia** is a postdoctoral researcher at Goldsmiths, University of London. His research focuses on user-centered methods to observe, design and evaluate new interactive systems able to support the most creative aspects of music composition such as free expression, interactive exploration and refinement of musical ideas.

**Andrew Johnston** is senior lecturer at the University of Technology Sydney and co-director of the Creativity & Cognition Studios, an interdisciplinary research group working at the intersection of creativity and technology. His research focuses on the design of systems that support experimental, exploratory approaches to live performance, and the experiences and creative practices of the artists who use them.

### Website

The workshop website will be hosted by The Open University at <http://mcl.open.ac.uk/music-chi>. The website will provide participants with information on the accepted position papers, workshop programme and any other relevant information.

### Pre-Workshop Plans

Prior to the workshop, potential participants will be asked to submit anonymized 2-4 page position papers in the CHI extended abstract format by 11<sup>th</sup> December 2015. Papers may be submitted with co-organizers as authors or co-authors.

We will encourage authors to consider broader implications and HCI concerns where appropriate,

implications for related fields, look at new perspectives, and talk with people with related concerns for other disciplines.

In the interest of developing dialogue, as well as seeking submissions from Music Interaction researchers already familiar with mainstream HCI, we will encourage submissions from cutting edge Music Interaction researchers who are less familiar with HCI, but who believe their work may have wider implications for interactivity. We will also encourage submissions from researchers in any area of HCI with insights relevant to musical interaction.

Each paper will be blind reviewed by at least two workshop organisers using a refereeing management system. All organisers will take part in reviewing. The organizers will select **no more than 16** position papers for presentation at the workshop, and authors will be informed of acceptance by 21<sup>st</sup> December 2015. Papers will be selected based on quality and relevance to the workshop theme and goals. Accepted position papers will be uploaded to the workshop website (<http://mcl.open.ac.uk/music-chi>).

Participants will be encouraged to read all of the accepted papers in advance of the workshop in order that they may come to the workshop primed with relevant questions, issues and discussion points.

### Workshop Structure

The workshop will last one day. The organizers will open the workshop with a short introduction covering the rationale for the workshop, some candidate themes and the program for the workshop. All papers will be presented in the morning over about three hours. We

will strictly enforce a limit of ten minutes per presentation (eight minutes presentation plus two minutes for questions). During lunch, participants will be invited to reflect on the presentations and post suggestions for themes/topics to be collaboratively explored in groups in the afternoon.

After lunch, once themes have been agreed, participants will be split into groups, with a minimum of three and a maximum of six people per group. Each group will be asked to discuss one of the themes in more detail and produce a short presentation based on their discussions. The ultimate aim is for each group to identify the basis for a collaborative paper for publication to be completed after the workshop.

At the end of the workshop, the organizers will summarize the findings and invite the participants to produce elaborated versions of their position papers. In addition, a small number of newly written collaborative papers will be submitted for inclusion in a forthcoming collection, as discussed in the next section.

### Post-Workshop Plans

After the workshop, the organizers will prepare a report on the workshop for submission to ACM Interactions.

All accepted submissions (2-4 pages) will be published on the workshop website.

All authors will be invited to submit for review longer, revised versions of their submissions including new material, together with the collaboratively produced papers. Springer have expressed an interest in publishing the result as a book in the new Cultural Computing Series, but we will also consider expanding

the collection with an open call and publishing in a Journal special issue, for example TOCHI or Personal and Ubiquitous Computing.

### Call for Participation

This workshop will reflect on the latest research in Music and HCI with the aim of strengthening the dialogue between the Music Interaction community and the wider HCI community. We will explore recent ideas from Music Interaction that may contribute new perspectives to HCI, and conversely, recent HCI research with implications for Music Interaction. Contributors engaged in research in any area of Music Interaction or HCI who would like to contribute to a sustained widening of the dialogue between the distinctive concerns of the Music Interaction community and the wider HCI community will be welcome.

Authors should submit an anonymized 2-4 page position paper using the extended abstract format (<http://chi2016.acm.org/wp/guide-to-submission-formats/>) before the deadline of 8th January 2015 (full details are available on the workshop website <http://mcl.open.ac.uk/music-chi>).

Presentations of a maximum of 16 position papers will be followed by the identification of issues for in-depth discussions in smaller groups. Each group will attempt to identify the basis for a potential collaborative paper.

Accepted position papers will be published on the workshop website. A report on the workshop discussions and outcomes will be submitted for publication to ACM Interactions. In addition, we propose a book or special journal issue to which all authors will be invited to submit extended versions of

their submission, together with collaboratively produced papers.

Please note that at least one author of each accepted paper must attend the workshop and register for both the workshop and at least one day of the conference.

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