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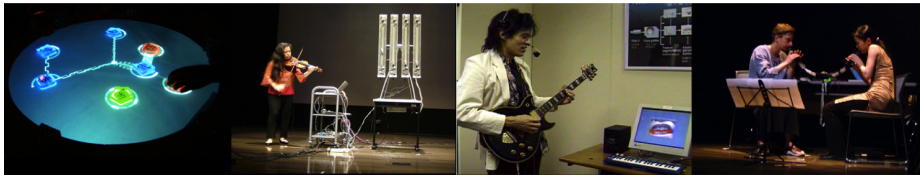


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# How to Design and Build New Musical Interfaces

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**Fig. 1.** Example Case Studies from the New Interfaces for Musical Expression (NIME) conference.

**Abstract.** This **half day** course introduces the field of musical interface design and implementation. Participants will learn and practice key aspects of the theory and practice of designing original interactive music technology with case studies including augmented and sensor based instruments, audio-visual instruments, mobile, and networked music making. Digital technologies offer powerful opportunities for the creation and manipulation of sound, however the flexibility of these technologies implies a confusing array of choices for musical composers and performers. Some artists have faced this challenge by using computers directly to create new musical forms. However, most would agree the computer is not a musical instrument, in the same sense as traditional instruments, and it is natural to ask 'how to play the computer' in a way appropriate to human brains and bodies. To attempt to answer this question in the course, we draw from the International Conference on New Interfaces for Musical Expression (NIME) [2, 1], which began as a workshop of CHI 2001 [4] and explore connections with the established field of human-computer interaction

*abstract*

**Keywords:** new interfaces for musical expression, digital musical instruments

## 1 Learning Objectives and Structure

The course learning objectives are: 1. Provide a framework for understanding the current research on new musical interface technology; 2. Introduce the theory &

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practice of NIME; 3. Point to further knowledge resources; 4. Get to know some of the people & work of NIME; 5. Suggest how to begin creating new musical interfaces for a lifetime of challenge & enjoyment. Participants will participate in a NIME design exercise.

The structure of the course is in two modules:

1. **Module A : Introduction, Tools, Design:** 1. Introduction; 2 Practical Guide to Building Musical Interfaces; 3. Video-based Interfaces; 4. Design and Aesthetics
2. **Module B : Case studies, Theory, and Education:** 1. Case studies; 2. Theory; 3. Education
3. **Design Exercise**

## 2 Intended Audience

Our primary objective in presenting this tutorial is to bring participants up-to-speed on the application of interactive techniques to music technology. No specific technical background is required, though some familiarity with interactive systems may be helpful. In particular, we do not assume any prior knowledge of sensors, microcontrollers, audio synthesis methods, but rather aim to provide participants with an introduction to these areas, as well as pointers to resources for further study. As such, the tutorial should be well suited to beginning graduate students or advanced undergraduates who are interested in this area of research; composers and performers who wish to expand their repertoire of methods and tools; member of the general public curious about recent developments and ongoing research in music technology.

## 3 Reading list

The course notes will be available for attendees to read prior to the course. Currently, a version of the notes can be found at: DOI: [10.1145/2659467.2659470](https://doi.org/10.1145/2659467.2659470)

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