About This Issue

This double issue of *Computer Music Journal* features two pairs of companion articles as well as a number of individual articles. The first pair of companion articles describes a recent five-year project at the University of Edinburgh called NESS (Next Generation Sound Synthesis). The focus is physical modeling synthesis, using parallel hardware to accelerate computationally demanding algorithms. To allow synthesis for very general musical systems, the authors use mainstream time-stepping techniques, rather than standard physical-modeling methods such as digital waveguides and modal synthesis. In addition to technical explications of the NESS software, including parallelization and control issues, the second article discusses multichannel pieces by five composers who used the software's algorithms for simulating brass, string, and percussion sounds as well as room acoustics.

The second pair of companion articles comes from Princeton University. These articles describe the music software known as bitKlavier, which has a graphical user interface and is used as a musical instrument by playing a MIDI keyboard. The first article covers the motivation behind the software, its development history, and a variety of application areas. The second delves into one such area: the exploration of tuning systems, such as forms of Just intonation that feature dynamic retuning depending on which keys are depressed.

The article by Angelo Fraietta et al. reports on a Java-based programming environment called HappyBrackets. This software was designed to facilitate creative coding of musical applications for networked devices using Internet of Things technology. Example projects using HappyBrackets included a dance performance with live coding, a sound installation at a museum (see the front cover of this issue), and a composition for planetarium and percussion ensemble.

Two articles in this issue cover machine improvisation, from different angles. The first, by Ken Déguernel et al., builds upon the authors' previous work presented in *CMJ* 42:2 (Summer 2018). As with that earlier article, the authors are interested in modeling jazz improvisation. Here they present a technique that learns the music's hierarchical structure—that is, its form, instead of relying solely on the lowest harmonic level: the changes from one chord to the next.

The second article on improvisation describes a Basque tradition known as txalaparta, which has fascinated composers such as John Cage and Steve Reich. In txalaparta music, two players rapidly alternate in striking wooden planks with wooden sticks, achieving a percussive type of hocket (interleaving). The authors created software to emulate that musical style, both in standalone form (simulating two performers) and in interaction with a human musician (in which case the software simulates one performer while listening to the human). The authors stress the musicological benefit of analysis through emulation, especially in the case of a little-known and improvised type of music that has received scant academic attention.

The issue's final article continues the theme of style emulation, but in the context of composition rather than improvisation. In this article, the authors introduce a method for generating Bach-like chorales through reharmonization of Bach's original bass lines. The system incorporates both machine learning and rules of counterpoint.

As is often the case, media files to accompany many of this issue's articles are available at www.mitpressjournals.org/cmj.

In addition to the feature articles, the issue contains other customary sections, including Announcements, News, Letters, Reviews, and Products of Interest. A letter to the editor reports on the importance of taking musical rests into account when doing software-based musicological analysis. The Reviews section includes commentaries on the New Interfaces for Musical Expression (NIME) conference, a book on new notational practices, a CD by Agostino Di Scipio, and a multimedia piece by Sabina Covarrubias. The Products of Interest section announces an assortment of software plug-ins and digital audio workstations (DAWs), as well as many hardware devices such as controllers, microphones, headphones, recorders, and audio interfaces.

Front cover. Spiral, an installation by Oliver Bown, Angelo Fraietta, Adrian Lim-Klumpes, and the Tangents ensemble. A piano and percussion are played automatically via MIDI while 25 suspended Raspberry Pi devices play sampled guitar sounds. (From the article by Fraietta et al. Photo: Ryan Hernandez, reproduced courtesy of the Museum of Applied Arts and Sciences in Sydney.)

Back cover. The Ugarte Brothers playing a txalaparta. (Photo by Xabier Eskisabel. Creative Commons BY-SA.)