About This Issue

This issue's first article, by Anna Xambó, Alexander Lerch, and Jason Freeman, examines the use of music information retrieval (MIR) techniques in the practice of live coding (i.e., the generation of improvised music through onstage computer programming). Many MIR techniques for audio feature extraction are comparatively computer-intensive, which until recent years has hampered their use in the real-time context intrinsic to live coding. The authors not only survey existing live-coding software environments that facilitate such techniques, but also categorize the techniques and then present examples from their own implementations in the SuperCollider language. The three main categories described are audio repurposing (analysis, retrieval, and processing of audio clips from a database), audio rewiring (real-time manipulation of an audio input, possibly in a feedback loop), and audio remixing (processing and combining multiple inputs, coming from sources that might be geographically distributed).

The second article similarly examines a technique for real-time audio signal processing for performance, albeit without an MIR angle. In this second article, the authors are interested in applying effects to a singer's voice. All falling under the general category of vocal distortion, the effects include growls and other hoarse or raspy sounds emulating extended vocal techniques that are difficult for many classically trained singers

to achieve and sustain. Composer Marta Gentilucci collaborated with researchers Luc Ardaillon and Marco Liuni of Paris's Institut de Recherche et Coordination Acoustique/Musique (IRCAM). Their method uses parametrically controlled amplitude modulation and time-domain filtering to add subharmonics and noise to the original vocal signal.

The issue's third and fourth articles address challenges in preserving electronic music compositions for posterity. Such compositions include fixed-media works, such as classic works of tape music, as well as interactive computer music and, more generally, any works inherently dependent on real-time technologies for their realization in performance. The latter are the primary, though not exclusive, focus of the article "On the Documentation of Electronic Music." Lemouton et al., from IRCAM and three other French institutions, stress the importance of diverse documents for being able to interpret a piece of electronic music. The categories of documents can be plotted on a graph having one axis that runs from the prescriptive to the descriptive, and another axis running from the abstract to the concrete.

On the other hand, fixed-media works form the exclusive focus of the fourth article. Pretto et al. describe their technology to help automate the labor-intensive process of preserving historic works that were recorded on analog magnetic tape. The researchers use machine-

learning techniques to analyze the audio recording itself as well as a video recording of the tape's playback in a tape recorder. These analyses can detect the original recording's equalization curve, various problems that need to be corrected, and musicologically useful information such as splices and markings on the tape.

Regular readers of the Journal will recall the recent pair of special issues, guest-edited by Eric Lyon, on high-density loudspeaker arrays (*CMJ* 40:4 and 41:1). The first of those issues focused on institutions housing such arrays, including the Cube at Virginia Polytechnic Institute and State University (Virginia Tech). The Cube is a large room featuring a four-level array of approximately 150 loudspeakers. Virginia Tech hosts an annual festival of spatial music called Cube Fest; in this issue we present a review of its 2018 edition. The Reviews section continues with a report by our regular contributor Seth Rozanoff on the prestigious Gaudeamus Muziekweek festival of contemporary music in the Netherlands. The section concludes with a CD review, and it is followed as usual by the Products of Interest, edited by Margaret Cahill.

We are indebted to curator Folkmar Hein of Berlin for providing this year's Sound Anthology. The program notes are included here in the Winter issue, and the sound files are available online alongside this issue's PDF files.

Front cover. A set of illustrations from the article by Xambó, Lerch, and Freeman. More information can be found in the article's figure captions.

Back cover. Three figures from the article by Lemouton et al. Please refer to the captions in the article itself.