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# About This Issue

The first article in this issue surveys various designs for augmented trumpets, meaning acoustic trumpets on which sensors have been mounted to give the player additional performance controls for electronic sound generation. The authors, Joseph Thibodeau and Marcelo Wanderley, analyze the approaches embodied in twelve augmented trumpets and five augmented trumpet mouthpieces. They then discuss their own technique for sensing valve positions, by means of linear variable differential transformers. They argue for the utility of a modular design platform that integrates easily modifiable, expandable, and interchangeable parts, and they describe their proof-of-concept implementation of such a platform, known as Symbiote.

Next, we present a pair of articles by Gareth Loy that revisit the Systems Concepts Digital Synthesizer, nicknamed “the Samson Box” after its inventor, Peter Samson. This real-time device, illustrated on the front cover of this issue, served as the workhorse for music synthesis at Stanford University’s Center for Computer Research in Music and Acoustics (CCRMA) from the late 1970s to the early 1990s. The Samson Box’s unusually powerful and flexible design included 256 “generators” (oscillators) and 128 “modifiers,” permitting realistic polyphonic additive synthesis as well as subtractive synthesis, frequency modulation, physical modeling, reverberation,

and other techniques. The author, who wrote the first-generation music compiler for the Samson Box, relates the history of the Box’s design, installation, and software development, without shying away from critiquing some of its limitations. His second article provides extensive details about the device’s architecture, followed by an interview with Peter Samson. One occasion for these articles’ publication is the recent emulation of the Samson Box in a C program by Bill Schottstaedt and Mike McNabb, both of whom had written much software and music for the original device.

In the next article, Srikanth Cherla and his colleagues describe a technique for automatically generating melodic sequences that are stylistically similar to provided examples. In contrast to most previous work along these lines, such as François Pachet’s Continuator, the authors use audio input instead of a symbolic format such as MIDI. The output, however, is symbolic. The material chosen for study is a set of recorded riffs played on an electric guitar or bass guitar. By way of evaluation, the authors asked a group of musical experts to fill out a questionnaire assessing the system’s output.

The final article, by Parag Chordia and Sertan Şentürk, examines audio analysis techniques for north Indian classical music. The goal is to identify, in an audio recording of a melodic instrument or vocalist, the raag (raga)

and the raag’s tonic. This task is more complex than key detection in Western music for several reasons. First, raags are much more numerous than the two Western modes: major and minor. Second, Indian music is characterized by continuous pitch curves, making it less amenable to analysis using a chroma distribution, i.e., the relative occurrence frequencies of twelve fixed pitch classes. Finally, Indian music does not use a standard tuning frequency, such as the Western A440. The authors evaluate the accuracy and computational performance of several techniques, tested on a database of audio recordings of north Indian classical music.

Gareth Loy makes another appearance in this issue, this time as a reviewer. He reports on Bill Schottstaedt and Mike McNabb’s reconstruction of compositions they had created in the 1970s on the Samson Box, music that is now rendered in higher fidelity by their emulation program, sam.c. Using state-of-the-art 3-D cinema technology, the composers also restored the film to which their music is a soundtrack: a documentary showing stereoscopic imagery captured on the surface of the planet Mars in 1976 and 1979. *Computer Music Journal’s* reviews editor, Ross Feller, contributes a second review, an appreciation of a CD of works by Andrew May for acoustic instruments plus computer.

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*Front cover.* Peter Samson standing next to his creation, the Systems Concepts Digital Synthesizer, in 1992. (Courtesy of photographer Patte Wood, former administrator of CCRMA.)

*Back cover.* The Symbiote augmented trumpet, described in the article by Joseph Thibodeau and Marcelo Wanderley.