3:15

HH5. Real-time synthesis using the Synclavier. Brian Mendelsohn (Lightning Music and Sound, 5545 LBJ Freeway, Dallas, TX 75240)

The operating principles of the Synclavier are discussed. Demonstrations are performed on an actual instrument.

3:40

HH6. Current state of the art as embodied in the Kurzweil 250. Robert A. Moog (Kurzweil Music Systems, 411 Waverly Oaks Road, Waltham, MA 02154)

The first objective of this presentation is to describe the Kurzweil 250 and to compare it with other electronic keyboard musical instruments. The second objective is to provide some personal projections on where the future lies for electronic keyboard musical instruments.

Contributed Papers

4:05

HH7. A low cost digital synthesizer system for music applications and psychoacoustic research. Robert C. Maher (Department of Electrical and Computer Engineering, University of Wisconsin-Madison, c/o 2129 Gateway Street, Middleton, WI 53562), John H. Scandrett, Robert E. Crawford, Jr. (Department of Physics, Washington University, St. Louis, MO 63130), and Kenneth W. Grant (Central Institute for the Deaf, 818 S. Euclid Street, St. Louis, MO 63110)

The availability of microcomputers has done little to give a musician or acoustic researcher of modest means access to computer-assisted sound generation. To help remedy this situation, our work has resulted in an integrated digital sound synthesis system using a popular microcomputer and commercially available plug-in synthesizer, all for less then $4000. One software package for music generation and another for psychoacoustic research will be described. For music, the program VERSATRACS allows versatile manipulation of sound in real time or artificial time. Musical note entry is from a piano-style keyboard. All notes and parameter modifications are held in memory for subsequent playback, editing, and permanent storage on floppy disk. For psychoacoustics, the program AUDIO EDITOR uses frequency-vs-time and amplitude-vs-time histories to control independently each of 16 available digital oscillators. A novel time window representation provides powerful editing features. Sound samples of music and research audio will be presented. [This work is supported partially under a National Science Foundation Graduate Fellowship.]

4:17

HH8. Real-time music synthesis: The importance of ease and completeness of flexible control. G. L. Gibian and E. N. Harnden (Physics Department, American University, Washington, DC 20016)

One definition of a real-time music synthesizer is one which allows spontaneous and immediate specification or alteration of all available acoustic parameters, including the configuration or "patch" of module interconnections. This definition does not exclude the ability to use preprogrammed patches, parameter values, note sequences, or stored sounds. In any case, the goal is to reduce the delay time between conceptualization and realization by increasing the ease and completeness of real-time control. Many commercially available synthesizers allow performances of preprogrammed note sequences with real-time selection of preset timbres which may include sampled sounds. Less common is the ability to simultaneously modify several of the stored parameters. Musical examples and circuit diagrams will be presented to illustrate a modest microcomputer-based real-time polyphonic synthesizer using inexpensive VLSI chips. The chips implement repetitive processes in hardware rather than software, generating and modifying sounds according to parameter tables, while functioning in parallel, leaving the computer free to read control-surface inputs in real time.

THURSDAY AFTERNOON, 11 APRIL 1985 ROOM 3-122, 1:30 TO 4:25 P.M.

Session II. Noise IV: General Noise Control

Robert W. Crouch, Chairman
The Boeing Company, P.O. Box 3707, Seattle, Washington 98124

Contributed Papers

1:30

II1. Measurement of impulse noise propagation over natural impedance surfaces. Nelson Lewis (US Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD 21010) and Richard Raspet (US Army Construction Engineering Research Laboratory, P.O. Box 4005, Champaign, IL 61820-1305)

The peak sound pressure level decay with distance of the impulse noise from hand grenade simulators has been measured over the following types of surfaces: water, swamp, rocky ground with small bushes, dead grass with sparse snow cover, and dense evergreen forest. The ground impedance is estimated for each surface using the calculation of R. Raspet, H. E. Bass, and J. Ezell [J. Acoust. Soc. Am. 74, 267–1274 (1983)] and predictions of the effect of each type of ground on lower frequency pulses are estimated.

1:45

II2. A source cancellation method of noise control. G. H. Koopmann (University of Houston, Houston, TX 77004), W. Chen (China Railroad