Center for Computer Research in Music and Acoustics
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Since 1966, members of Stanford University's Center for Computer Research in Music and Acoustics (John M. Chowning, Director) have been dedicated to the development of the computer as a new artistic medium. In addition to research in digital audio techniques, psychacoustics, and signal processing, a major concern of CCRMA has been to maintain a unique facility where composers and researchers can have access to sophisticated techniques with which to enhance their compositional and creative possibilities.

CCRMA was established as a University Center in the Department of Music in June, 1975. This was made possible by funding provided jointly by the National Science Foundation for research and teaching in computer techniques of interactive sound production and the perception of timbre, and by a grant from the National Endowment for the Arts for computing equipment for musical purposes. As a part of the Music Department, the teaching and academic aspects of the Center are provided for by Stanford University. One aim of the Center was to establish an international facility where researchers, composers, and students could work with strong computer-based technological support.

CCRMA is based upon the use of a powerful interactive computer system for purposes of music composition, synthesis, and research, by staff, students, and invited researchers and composers. As a musical instrument, the computer system is possibly the most flexible of all instruments. To speak of it as a conventional musical instrument, however, is somewhat misleading because the system is capable of simultaneously producing a large number of independent voices having complex timbral characteristics. It is much more general than a conventional musical instrument in that it can generate any sound that can be produced by loudspeakers, modify and transform real sounds entered into the system by means of microphone and digital-to-analog converters, remember and modify articulated musical input, and simulate the location and movement of sounds in a variety of illusory reverberant spaces. Equally important, the facility is capable of serving a number of composers and researchers simultaneously, providing for each a direct control over the medium to a degree which was never before possible.

A New Music Resource

In addition to the Stanford community, CCRMA serves as a resource for visiting composers and researchers from throughout the world. The results of this interaction are presented to the public through concerts, demonstrations and research publications.

CCRMA conducts a five-week intensive workshop in Computer Music each summer. This workshop has an enrollment of twenty composers from the U.S. and abroad and has been the impetus for other new computer music facilities. Outside of the workshop, we also make the facility available to a limited number of visiting composers for extended periods of time to produce major compositions.

Several public concerts are given each year with an audience of approximately 2,000 people per concert and approximately nine informal demonstrations are given at the center with an attendance of between 30 to 50 people. Members of the CCRMA staff also give invited lectures and presentations at various institutions and colloquia in the U.S. and abroad. Works composed at CCRMA are widely represented in concerts, competitions, and radio broadcasts. Over 40 compositions have been realized at CCRMA. Several of these compositions have received major prizes including the prestigious Bourges prize in electronic music.

The Center has close associations and has served as the prototype or impetus for many computer music facilities including Columbia, Colgate, Clark, Carnegie-Mellon, Michigan State, George Lucas' Marin facility, Queen's Univ. and the University of California at San Diego. The association with IRCAM, Paris, the institute directed by Pierre Boulez, has developed as proposed by Boulez in 1974 in that the two centers have a strong interaction through the exchange of research ideas, results and personnel.

Facility

The Stanford Computer Music facility consists of a Foonly F4 central processor with 1.5 Mwords of memory, a specially built digital synthesizer/processor, display system with sixteen terminals, and three large capacity disk drives. A special listening room has been built which contains professional quality tape recorders, mixer, and 4 channels of amplifiers and speakers. In addition to this there are one stereo and three quadraphonic listening stations. Using these stations, up to nine composers can work directly with digital sound at the same time. The facility is located in a large building made available for the Center's use by Stanford University.