COMPUTER MUSIC STUDIOS
AT MICHIGAN STATE UNIVERSITY

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Abstract:
The Michigan State University in E. Lansing, site of the first International Computer Music Conference in 1974, established the current suite of computer music studios within the School of Music in 1989. The talk provides an overview of facilities, instruction, and creative work and research carried out since 1989, and includes musical excerpts of compositions created and sound examples pertaining to research conducted.

Facilities:
The computer music facilities at Michigan State University consist of three studios: all three studios support creative work, research, and instruction.

One is an open access studio (i.e. limited reserved time for classes), available to all students, staff, and faculty in the university, that can accommodate ten users simultaneously. It has Macintosh, IBM, Next, and Sun hardware, MIDI interfaces, digital synthesizers and samplers (Roland, Yamaha, Casio, Ensoniq), digital effects processors, cassette and DAT recording devices (and one digital input-output device for the Next), printers, and ethernet network connections. Various music software packages and programming languages support a range of activities: music notation, MIDI sequencing and recording, timbre construction and editing, sample transformation and editing, algorithmic composition and digital synthesis. Software is also available that supports instruction in set theory, ear training, and music fundamentals, in addition to word-processing and network software.

The second studio is a limited access studio (i.e. reserved blocks of time on a weekly basis), available to advanced students and to faculty, that accommodates a single user at a time. It has Macintosh hardware, with Digidesign direct-to-disk hardware for editing and recording, a MIDI interface and router, digital synthesizers (Roland, Yamaha, Casio, Ensoniq, and Kurzweil), a Yamaha Disklavier, digital effects processors, digital mixers, and cassette, DAT, and analog two, four, and eight track decks, as well as a quadraphonic sound system. The software mirrors that of the first studio in function, except that no software support for instruction in music theory is provided, and SoundTools software is available for digital editing.

The third studio is a limited access studio, available to advanced students and to faculty, that also accommodates a single user at a time. It has Next hardware, a digital input-output device, matrix, DAT and cassette recording devices, as well as a stereo sound system. The software mirrors that of the first studio, but has a wider range of software for analysis and synthesis, as well as a range of programs developed for specific compositional purposes (written in C or C++ for Unix platforms).

Instruction:
Courses offered include one that covers the fundamentals of psycho-acoustics, synthesis, and MIDI, the characteristics of various digital synthesizers and samplers, and software for notation, for sequencing and recording, and for creating and transforming timbres and samples (undergraduate level: Introduction to Computer Music; graduate level: Composition with Computers), another that covers the history and analysis of electro-acoustic music from the 18th to the present (Electronic and Computer Music Literature), another course that provides, on a recurring basis, for directed study in composition or research on sound (undergraduate: Independent Projects in Computer Music; graduate: Advanced Computer Music Projects), and finally, a course that explores conceptual and technical aspects of direct digital synthesis and
of algorithmic and stochastic approaches to composition (Advanced Computer Music Projects: Programming and Composing).

These are no separate degree program in computer music. Undergraduate and graduate students receive degrees within the School of Music, the Department of Computer Science, and in forth, and the work on computer music is taken as their area of specialization. Complementary courses that draw on computer technology are offered in the Music Theory area (Computer Assisted Instruction and Multimedia Applications in Music Theory; Set Theory, Atonality, and Serialism) and in the Music Education area.

Creative Activity and Research

Various research projects have been completed, or are in progress (involving the development of computer programs), some of them related to specific compositions, others more general in nature, and some using existing computer applications: a software application for constructing timbres using natural language descriptors (Erlington); an object-oriented library for creating MIDI applications using the Roland M90400F (Sepulchre); the development of software tools for use in granular synthesis (Sullivan, P Lynch, Schalkhauser, Hoepfinger); software tools that use paralinguistic and prosodic features of language as models in the creation of musical events (Sarah Miller, in progress); the use of non-linear dynamic systems, in particular the logistics difference equation, in granular synthesis (Erik Larson, in progress); the use of hyperbolics functions in generating rhythmic branching and the generation of performance data specifying ensemble coordination for automated performance media (Harold Fortin); the recursive use of proportions in the creation of temporal relationships, timbre, and form (Mark Sullivan, Patrick Callow, in progress); the use of continuous computer data (within sequencing software) as the primary means of specification of change and variety in the composition (Overtion, Continuum, Herrera, Studies on a Square Wave); the use of graphics as a source for sound generation, (Patrick Callow, created with HyperTrip and liff files).

Selected List of Compositions Created (since 1989)

Patrick Callow Complements, Tracked Surfaces, Five Pieces for Automated Horn
Dennis Diment The Morals of Genealogy
Harold Fortin Untitled No. 5: Transcendental Enude for Computer-controlled Keyboard, GeoWrap, L’homme concrete, Branchings
Ronald Herrera Studies on a Square Wave
Erik Larson Extraction, The Application, "...there Will your Heart ...", Attractions
Sarah Miller Dialogues and Interruptions I, Dialogues and Interruptions II (in progress)
Kenneth Overtion Continuum Ouadra, a, Four Inertive Baguette-types, Dyantrazoid 182
Charles Ruggiero Fractured Mambos
Herbert Suarez thion
Mark Sullivan knots and twists, streams, incompatibilities

References:


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