

Studio Report Australian Centre for the Arts and Technology (ACAT)

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Background

ACAT was established by the Institute of the Arts at the Australian National University in 1989 for the teaching, research, recording and publishing of music and dynamic visual arts made with new technology. ACAT provides a unique environment in Australia for the artistic use of computers and as such is a focus for the education of multi-disciplinary artists interested in using new technologies as expressive tools.

The nature of ACAT's interdisciplinary activities associates it with other centres within the ANU such as the Centre for Information Science Research, the Supercomputer Facility and the CSIRO's Division of Information Technology.

Physical Facilities

Historically, the Centre was formed out of the Electronic Music Studios established in the 1970's by Don Banks at the Canberra School of Music. One of these studios notable contribution was to the development of the Fairlight CMI through the QII hybrid synthesiser. (Negotiations are currently being undertaken with the Museum of Sydney to house and provide proper upkeep of such "gems" - important items in Australia's musical history).

ACAT is housed in a separate building on the Acton campus within the Institute of the Arts. It operates on a seven-day/24 hour access. This "never closed" policy supports those who wish to work at different hours and gives those in daytime employment the opportunity to make maximum use of the resources. The Polymedia Portable Geodesic Dome Performance Space is erected directly adjacent to the building.

Teaching

Teaching is a major activity of the Centre. Studies in computer music and computer animation at ACAT can be undertaken at non-award, undergraduate and graduate levels with the primary focus on graduate study. A limited number of places exist in some ACAT subjects for persons not undertaking formal study towards a course. Prospective graduate students who are missing some prerequisite use this program to increase their technical or aesthetic competence and demonstrate their ability to deal effectively with the issues inherent in their proposed discipline studies.

ACAT currently teaches in the undergraduate programs for the Schools of Music and Art: (a) Bachelor of Music: composition major and other music technology electives and (b) Bachelor of Arts (Visual): computer animation as a Sub-Major, Minor and Additional Studies. In addition, a limited number of places are available for cross-institution enrolments.

The part-time and full-time graduate courses offered are the Graduate Diploma in Electronic Arts (computer music, computer animation and interactive multimedia), first offered in 1991, and Master of Arts in the same media first offered in 1993, the Graduate Diploma of Music (Computer Music) first offered in 1987, and the Graduate Diploma of Art (Visual, in computer animation) first offered in 1991. A Phd research program is also available.

The educational philosophy of ACAT is for students to focus on acquiring understanding of general principles and to explore these principles as artistically free of stylistic impositions by the staff as possible.

There is an approximate gender balance in the Centre: although there are more females than males in the undergraduate courses it is the other way around in the higher degrees programs. Handbooks detailing courses and subject outlines are available from Student Administration at the Institute of the Arts.

Artistic Practice

Artistic practice at ACAT involves the development of aesthetic and technical principles and practices, especially as they relate to the use of new technologies, for artistic expression. Particular emphasis is given to works which explore three-dimensional space and real-time composition and performance involving both music and animation. In order to assist in the realisation of these ideas, staff have designed and built a multi-channel portable geodesic dome performance space in which they perform such works and with which they sometimes tour. All the staff have an interest in algorithmic composition.

Composition and performance of both music and animation are a major part of the Centre's activities. In particular, public performances by students and staff occur regularly, especially towards the end of each teaching semester. These "end-of-semester" performance nights are a bit of an institution by now and are planned, advertised and run entirely by the students themselves.

Scientific Research

Scientific research in the Centre is focussed on, but not restricted to, developing new techniques for effective visual and sonic representations of complex numerical and procedural models.

This research involves the application of psychophysical and other data to software design for sound and image synthesis on a range of computers from conventional personal architectures to supercomputers and parallel and cellular processing

¹ For the Australian Computer Music Association Conference, Melbourne, June 1995.

machines. A computer model for the concurrent visual and aural Perceptionalisation of complex (multi-dimensional) events is being devised. The aim of this research is to develop interactive (real-time) techniques for establishing general principles for complementary sonic and visual representations of numerical models in space and time, and synthesis methodologies for procedural models.

As well as the use of the results of this research for the production of computer synthesised and controlled (simultaneous) sound and light compositions, this work has significance in interactive modelling and simulation (sonification and visualisation) for science, government and industry.

The Studios: Sound Composition and Production

The two music studios house a range of historically interesting as well as up-to-date sound synthesis, sampling and recording equipment for electroacoustic music composition (Sound Designer, Capybara, MIDI samplers, synthesis modules, ADAT for multitracking). The studios are all linked electronically and the main sound studio has visual linkage into the animation studio to allow SMPTE sound-on-video to be accomplished in a relatively sound isolated environment.

Computers and Software

Macintosh is the preferred PC for studio sound production (as well as administration) and animation is currently taught and produced on Amigas. The recent addition to our Sun SLC's of a suite of Silicon Graphics workstations (Indigo and Indy) are proving a worthwhile addition for research and production purposes for both animation and music and provide useful gateways to the CM-5 and other parallel machines at the Supercomputer Facility. It is our intention to move as much work and teaching as possible onto this platform. The building has extensive ethernet and Appletalk networks throughout.

All students learn to program. A variety of languages are used with a tendency towards interpretive (APL, Forth) rather than compiled languages. Tcl/Tk is used for Unix user-interface design. Music software for the Macintosh platform includes most of the commonly used packages and we have just been licensed to use the IRCAM Software for the Silicon Graphics workstations.

Staff

There are currently three full-time and seven part-time academic staff and one full-time and one part-time administrative assistants. Technical assistance in the Centre is presently limited to not more than two days a week, together with some part-time hours for basic maintenance. Most of the current technical officer's time is spent in servicing existing equipment with almost no involvement in research and development.

Multimedia

ACAT, on behalf of the ANU, recently spearheaded the development of a proposal for a Cooperative Multimedia Centre in Canberra incorporating most of the national cultural institutions, the Interactive Entertainment Industry and other private and public research organisations. We await the outcome of DEET's deliberations in this manner but continue to push for proper representation of issues to do with sound and music in a visually dominated medium.

Conclusion

ACAT was extensively reviewed in 1994 and has been enthusiastically endorsed to continue within the Institute of the Arts for another ten years. I would like to take this opportunity to thank those in the computer music community who supported us through this review process. Although its establishment during the recession of the late 1980's has ensured it is a financially restricted operation, its phenomenal growth over the last six years could be a lesson to the musical Mafia that have closed down well established studios elsewhere in Australia.