GRANULAR SYNTHESIS AND THE FCURVE SOUND GENERATOR

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Abstract

Granular synthesis programs, written in the Cmix music programming language, have been expanded to provide more function curves which describe sonic gestures. The Fcurve/Sound Generator System links digital sound created with granular synthesis on a NeXT computer, with graphics created in SoftImage Creative Environment on Silicon Graphics workstations. Through an interface to SoftImage which stores data in sound templates, these curves can be applied to various graphical parameters. The artist/composer may choose the mapping from the sound parameter hierarchy to the graphical parameter hierarchy through menus in the interface. In an image-to-sound transformation, data from graphical morphing and distortion

Since the graphic interface does not display actual scene elements such as models, the best method of using the system is currently to create sound templates, or graphic primitives, which have sound data mapped into their function curves. Then, function curves can be copied from the templates to other objects in Softimage.

Results

One study produced so far is composed of two layers of granular synthesis sound, and graphics generated from the sound data. The graphics consist of a wave with motion based on the frequency of the grain parameters of one sound, and several spheres moving in relation to the other sound's frequency. Less obvious mappings link grain parameters such as grain rate, duration and location with color, transparency and object location. This example shows potential for more complex and interesting multimedia work with this system.

Image to Sound

Translation from graphical data back to sound is an obvious, desirable extension. In another experiment, we used a set of images sequentially. Each image first distorted geometrically, and then morphed into a new image. The amount of morphing

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and distortion was mapped into sound parameters, such as changing frequencies and grain rates.

Future Research

We plan to expand and integrate the programs for sound and graphics. An interface for sound generation can be created similar to the StochGran application on the NeXT for fsgran. As fsgran already runs on the SGI, sound generation may also be done on the same platform as the graphics. Finally, we plan to work with other graphical artists and composers to create multimedia works with this system.

Conclusion

An integrated approach to creating multimedia work has been sought by relating granular synthesis sounds and graphics. The sound program component, created on the NeXTstep platform, makes use of powerful granular synthesis techniques. The Fcurve interface allows the user flexibility in ways of mapping this sound data to image.

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