

Hyperscore

The reading for this week is a detailed description of Mary Farbood's musical composition tool, Hyperscore developed for her Master's thesis. The section we were asked to read is organized into four basic parts. It begins with a discussion of what led to the creation of Hyperscore, followed by a description of the four major versions of Hyperscore released so far. The paper concludes with a discussion of the project including future work and finally by discussing how Hyperscore fits into a larger musical project called the Toy Symphony.

Originally Hyperscore was intended to be the software component of a physical device, the "Big Thing" aimed at helping children become familiar with musical ideas. Although the original concept never fully got off the ground Hyperscore evolved into a stand alone graphical interface for composition intended for users of all levels. The fundamental assumption driving the motivation for Hyperscore is that musical composition at extreme granularities, for example composing short melodies and broad thematic architecture, is relatively easy. The difficult part is being able to bridge the pieces together so that the small individual pieces flow together to achieve the overall structure desired in a desired and "good" way.

There are four versions of Hyperscore described in the paper. The first version presents the basic ideas fundamental to the project. The main graphical component is a drawing window in which a user can draw a curve/function. The user is also presented with several pre-composed musical motives that can be linked to the drawing the system will use to produce a piece. The system uses a vector analysis package offering a mathematical model that is convenient for allowing useful heuristics in mapping the graphics to musical components and structures. The basic idea is that the core of a piece consists of 5 voices. The first is the backbone and the others are chosen from 3 possibilities based stochastically on the shape of the curve. The low level musical components are represented as MIDI while the higher level structures are represented as ScoreObj objects that allow multiple tracks.

The first version worked well for producing textures but there was little or no phrasing or harmonic movement. To try to address these issues the second version allowed for multiple supporting curves to augment the "spine", through the use of pens. This called for a radical change in the production algorithm so that the additional motives were now chosen deterministically based on the color of the pen. It also allowed the user to determine where the motives would appear and provided some functionality for controlling the texture of the sound based on the curvature of the line. Additionally, hierarchical Markov models were introduced to handle different layers of organization.

The second version improved upon the first but the structure of the piece still didn't last much longer than 30 seconds. The major shift in version 3 was change from the software being a tool for humans influencing a computer driven process to a tool for computers aid in a human driven process. This was done through a combination of UI changes and back end changes, including

more complex ScoreObj objects, new harmony types and allowing the user to save chord progressions when they find one they like.

The third version suffered the reverse problem of the first two, in that too much unstructured decision making was left up to the composer. The fourth version while similar to the third in this regard, allowed motives to be edited and curves to be modified without having to delete the whole curve. The harmonic generator was also completely revamped using David Cope's SPEAC system. New mappings from the curve to musical textures and components was also implemented.

There are many technical questions that have been addressed throughout the releases and many that are still not addressed but are clearly apparent. For example, it is noted that the harmony generator is still not high enough quality, the motive-editor is severely lacking, playback options are slim and the ability to edit at various levels of abstraction. However, there are still many deeper issues that are left up in the air. It is still unclear exactly how graphical representations should be mapped into musical components (what does music look like), or how much control should be left to the user versus automation.

Although the first project Hyperscore was intended to be apart of did not work out, it ended up being a part of another larger project called the Toy Symphony, which was a musical performance and education project for children. During the weeks prior to the performance groups of children were given time to play with several "musical toys" to help introduce and ease the children into the creative music making process. While the toys were used to play with sounds and get immediate musical responses, Hyperscore was intended to be used for helping the children compose a longer, 3 minute piece.