High Level Interfaces into Creative Multimedia

The ‘Improviser’ program and beyond

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Human creativity and in particular musical creativity can be greatly enhanced by the construction of high level interfaces into traditional areas of expertise. Just as the word processor offers a new way of writing documents, so can high level software offer new ways of making music, painting pictures, graphic design etc which means the artform will be accessible by many more people than solely professional practicioners. The fact that an artistic area of expertise can be modelled at the cognitive level means that progressive layers of domain specific intelligence can be layered on top of system primitives to give the naïve user creative access to a previously inaccessible area. A particularly interesting implementation of this idea is through the use of Genetic Algorithms, where phenotypic structures are evaluated according to their sound and no other criteria. This means that a user with no formal understanding of music can use such a program to evolve personally satisfying music without going through any functional decomposition of musical structure. As Duke Ellington said “If it sounds good it is good!”. The only criteria a person needs to evaluate the output is their immediate perception of the results.

This transparent interface to the generation of creative content has never been possible until very recently.

Furthermore, this means that domain specific areas can interact at the model/representational level according to user specified mappings, or according to internal criteria that evolve over time and rely on intelligence that extends between the system and the external world.

With respect to music a main interest is in the construction of solo lines in music based upon the western harmonic system. It is remarkable how jazz musicians seem to create solos from nothing. The Improviser program is a model of the psychological processes that are employed in the creation of improvised solos. It is clear that musicians can only improvise after having internalized a great deal of musical knowledge, whether implicitly through exposure or explicitly through formal training. They listen to music and dynamically internalize the music they like, and at some level they employ rules to generate/create new examples of this music in their own individual way.

The Improviser program is essentially computer software that plays out a midi file and constructs an 'improvised line' that changes every time it is played. This means that although for example Louis Armstrong is dead, the software will create solos in the style of Louis Armstrong that are always different and always interesting to listen to. This is virtual music that has a strong basis in real music. Although Louis Armstrong might not have played the actual solo that the program plays, it is conceivable that he might well have done, and what’s more in some cases the solo might be better than one he played! This fact alone makes the program aesthetically viable and makes it virtual. It means that musical content can be generated in the style of a particular musician or personality.

The program can play a series of solos in the style of Charlie Parker. Charlie Parker is considered to be the founding father of modern jazz. He invented the Be-bop style of playing that is still the essential basis of modern jazz forty years later and is considered to be a musical genius. His style is characterized by its rhythmic and harmonic complexity and melodic invention. The 'takes' have been heard by experts in Parker's music who consider them to sound like undiscovered recordings.

If a user can interact with such a reified ‘intelligence’ in a way that evolves the music over time towards a more personal set of constraints based upon conscious and sub-conscious criteria, this has the potential to give much greater user satisfaction.

An interesting application of this technology is in the area of children's education/performance, where children can create musical phrases by bodily movements in a physical space. This raises a number of interesting questions about constraints, cognition and education.