Live Cinema : an instrument for cinema editing as a live performance

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The Live Cinema research project aims at building an instrument for cinema editing as a live performance. Both an advanced visual interface for sample-based media performance and a novel tangible editing tool for motion picture, our prototype is a large touch-sensitive image canvas equipped with haptic turntables. A combination of adaptive cinema scoring and accurate hands-on control render possible feature-length narrative video improvisation.

Live Cinema

The recent years have seen the emergence of new live video practices called *Live Cinema* or *Performance Cinema* [1, 2]. For a filmmaker, the ability to randomly access film shots from a hard disk has already radically changed the way movies are edited – it is now also changing the way they are presented. Most films today are edited on non-linear postproduction tools but still exported to linear media. In the context of a live performance however, film does not have to be presented anymore in a linear, deterministic way, as a static sequence of shots on a one-dimensional timeline – it can instead be a connected constellation of shots in a multidimensional narrative or performance space that can be traversed in multiple ways to generate a different interpretation of the same film each time.
We have been building such an instrument, that allows a filmmaker to assemble a feature-length film from beginning to end in front of the audience, making polymedia collaboration with other performers much more flexible and allowing new forms of film improvisation.

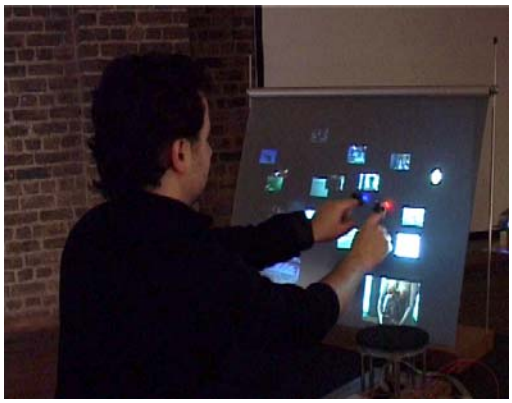

Figure 1. Using the Live Cinema instrument

Instrument Design

The design objectives of such an instrument are twofold : 1. intuitive media organization and just-in-time retrieval, so that the desired shot can be found at the right time ; 2. accurate and hands-on control so that media can be adjusted and manipulated during preview and playback.
After performing with a simple prototype in real conditions in clubs and festivals across Europe and the US, we found that, contrarily to most common computer-based performance tools : the interface needs to be *transparent*, so that the audience sees and understands the process; and *performative*, so that the audience can be engaged in the performer's effort.
For the organisational aspect, we have studied the shortcomings of current film editing tools and interviewed film editors, to arrive at a very simplified interface : only floating images that can be moved around using the two hands simultaneously on a large transparent canvas. The performer wears coloured LED thimbles on each finger as tracking is vision-based. The footage has to be pre-organized before the performance, using a cinema score and narrative categories such as time, space, character and emotion. The instrument keeps a sense of time and state during the performance to assist in narrative coherence.
For the performative aspect, we have studied the equipment and techniques of hip-hop DJs and electronic musicians. We have built two physical video turntables that can be associated to a shot or a stream that needs to be manipulated. The turntable spins at the speed of the shot and allows accurate speed and frame-by-frame control. It is also hit-sensitive and cutting between streams is achieved by hitting the turntables.

Figure 2. Video turntable

Film Score

In order to assist the filmmaker in the very complex task of assembling live the hundreds of shots that make up the film, shots need to be clustered on a loose film score that represents the film narrative structure, but still allowing unplanned exploration and flexible timing. It has to combine the spatial structure of a sampler with the time-based structure of an elastic multi-threaded sequencer, which is a common problem with electronic music software for live performance (such as Ableton Live). The filmmaker wants to be able to freely cut to different locations and characters, edit a scene rythmically and construct new meanings at each performance, while still keeping an overall narrative coherence. To that end, we are currently investigating different visual representations of narrative structures and notational strategies that would best allow to structure shots on an interactive score for film improvisation.

References

[1] San Francisco Performance Cinema Symposium. http://www.kether.com/SFPCS/index.html

[2] Sonic Light 2003. http://www.sonicacts.com