

MediaFlies

An Interactive Flocking Based Tool for the Remixing of Media

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Summary

The project MediaFlies realizes an interactive multi-agent system which remixes existing audio and video material through a process of fragmentation and rearrangement. Simulations of flocking and behavior synchronization form the algorithmic basis for the generative behavior of MediaFlies. Visitors can influence the system's behavior and provide some of it's media material via life video and audio capture.

Implementation

Agents

MediaFlies implements three types of agents. Flocking agents conduct BOIDS type of flocking and respond to user interaction. Video agents generate video feedback. Audio agent generate audio feedback. Both video and audio agents follow the flocking agents and adapt their feedback generation through synchronization.

Flocking

The implementation of flocking follows the classical BOIDS type of algorithm (see Figure 1).

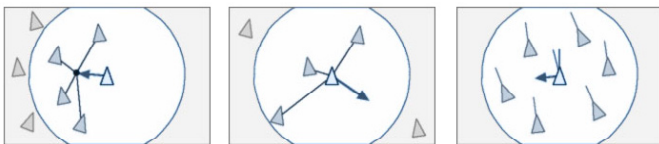


Figure 1: BOIDS Type of Agent Behavior Rules. From Left to Right: Cohesion, Evasion and Alignment.

Synchronization

Agents shift the values of parameters that are associated with audio and video feedback generation behaviors depending on the parameter values of their neighbors. Each behavior parameter consists of up to three component values (see Figure 2)

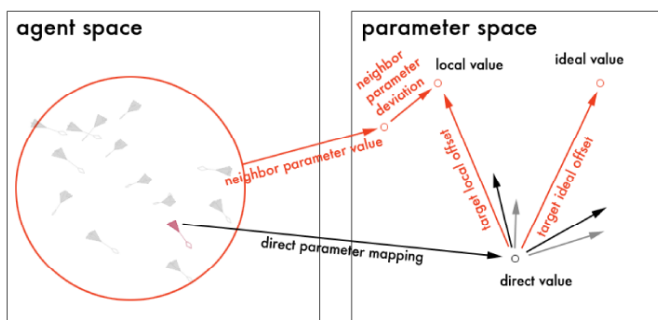


Figure 2: Parameter Synchronization

Media Handling

MediaFlies operates on media which are either retrieved from movie or audio files or acquired by life video and audio capture. Video frames and audio samples are stored in temporal order in two ring buffers. Media material from life capture is stored in the front part of the ring buffers. Material from video and audio files is inserted into the back part of the ring buffers. Agents retrieve the material they operate on from these ring buffers.

Feedback

Video Feedback Generation

Video feedback is controlled by video agents, each of which presents a small region of a video frame as a textured quadrangle. These agents synchronize their texture coordinates and video frame ring buffer positions.



Figure 4: Video Synchronization. Left: Unsynchronized, Right: Partially Synchronized

Audio Feedback Generation

Audio feedback is based on granular and subtractive synthesis (see Figure 5). Each audio agent controls an individual acoustic grain. Synchronized parameters include: grain delay, grain duration, grain start time, bandpass center frequency and bandpass frequency range.

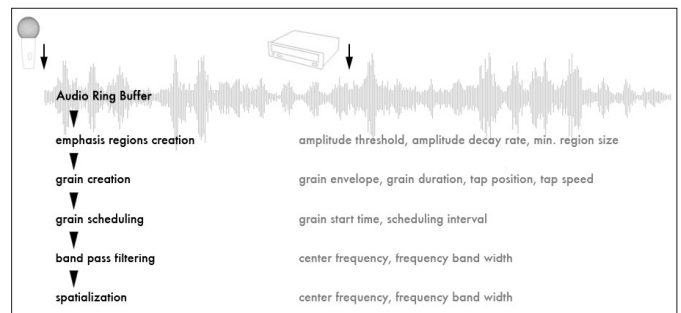


Figure 5: Sound Synthesis

Interaction

The flocking agents respond to user interaction by changing their movement. Video capture detects the visitor's position and movement. Stationary users create an attraction force field, which causes agent's to slow down and cluster at the user's position. Moving users create a motion force field, which causes agent's to accelerate and scatter. These changes in agent movement influence the degree of video and audio synchronization. In addition, visitors provide life media material via audio and video capture. Depending on the degree of synchronization, visitors may recognize themselves in the visual and acoustic feedback of MediaFlies.

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