

Interactive scores for 3D animation

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Context

Recently, the Movie Script Markup Language (MSML) [1] was introduced as a document specification for the structural representation of screenplay narratives, including an "animation" model that makes it possible to annotate the screenplay with "blocking notations" [2,3] and visualize them as 3D animation on a "virtual stage".

Objectives

In this Master's thesis, the general objective is to provide a computational model of blocking notations making it possible to execute and visualize them in real-time 3D animation; and to recognize them in video recordings.

To reach that goal, the candidate will review existing blocking notations [2,3] and extract a subset of useful blocking symbols that can be efficiently implemented in 3D animation; design and implement 3D animation algorithms for each blocking symbol in an existing real-time animation package such as Blender or Unity [4]; and design and implement algorithms for synchronizing multiple actor movements under the timed petri net model suggested by MSML [5,6,7,8].

The thesis will concentrate on "coarse-level" 3D animations that can be easily modeled as rigid body motions, with a focus on actor synchronization. Internally, the blocking notation should be translated to an "interactive score" [9,10] that can be executed by any combination of real, virtual and robotic actors.

For this thesis, we are looking for candidates with a strong background in real-time graphics programming and mathematics, and an interest in 3d animation and virtual reality. The Masters is expected to lead to PHD on the topic of building sophisticated user interactions for an augmented reality theatre stage.

References

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