

# Influence of Music and Sounds in an Agent-Based Storytelling Environment

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## 1 Introduction

The importance of sound and music in movies (Film Scoring) is undeniable. Film Scoring is used as a complement to the visual content helping to better understand it. The use of these artistic elements can be extended to interactive storytelling (IS) environments where stories are also told in a dynamic and interactive way. Because of IS particularities, such as the unpredictability of user actions and story development, this extension is not straightforward, and presents a problem that needs to be addressed. Further, the presence of autonomous virtual agents makes the creation of these stories more emergent, making difficult the process of creating sounds and music that is adequate. This paper presents a framework that proposes a possible solution to score a story created in these environments by intelligent virtual agents. Additionally, we studied the influence of some particular elements of sound and music (such as tempo, use of different instruments, etc) on the viewers and their perception of the actions of the characters and thus, on the consequent understanding of the story.

## 2 D3S Framework

The D3S (Dynamic Story Shadows and Sounds) framework was built with the main objective of increasing the understanding and enjoyment of a viewer of an interactive story generated in a virtual environment with autonomous virtual agents. It follows two parallel layers when considering music execution: *event sounds* and *background music*.

Event sounds are used to underscore actions of the virtual characters that occur in the scene. Differently, background music, offers some of the film score functions, with a special focus on enhancing the understanding of the story. In D3S, this type of music is classified in four different categories: character themes, background music that emphasizes emotions, background music for key moments and background music as filler.

Certain musical features can dynamically change according to the evolution of the environment. In D3S we considered: *volume*, *instrumentation*, and *tempo*.

Volume is associated with emotions intensity. Different instruments are associated with different characters so that the audience has a better perception of what is happening in the story and who is doing what. The third parameter manipulated was music *tempo* which is associated with environment's arousal.

This framework was successfully integrated with two storytelling environments: *I-Shadows* [1] and *FearNot!* [2].

### 3 Results and Conclusions

The results obtained showed that, with the help of music and sounds, viewers could understand better the story being created and have a more enjoyable experience while watching it.

More specifically, the association between instruments and characters is a good way of hinting which actions a certain character is doing, helping the audience to identify them. Changes in volume of sounds associated to actions between characters have an influence on the perception of the strength of the relation between them. Themes with features associated to happiness (such as major mode and faster tempo) might suggest that the character is happy, while themes with features associated to sadness (such as minor mode and slower tempo) might suggest that he is sad. Background music can also have a big impact about what is happening in scene - If we have two characters acting with a type of music, the audience might think they are doing something. If we change the type of music radically, they might think they are doing something completely different.

From the results obtained, we can draw some conclusions about the importance of music associated with virtual characters, emphasizing the importance that sound and music has in these characters perception, and eventually in their believability.

### References

1. Brisson, A.: *I-Shadows. Using Affect in an Emergent Interactive Drama*. MSc Thesis, Instituto Superior Técnico, Portugal (2007)
2. Aylett, R. , Vala, M., Sequeira, P., Paiva, A.: *FearNot! – An Emergent Narrative Approach to Virtual Dramas for Anti-bullying Education*. ICVS 2007, LNCS 4871, pp. 202 – 205, (2007)