

KIIDSOnto: An OWL DL Ontology for Narrative Reasoning

Federico Peinado and Pablo Gervás

Dpto. Sistemas Informáticos y Programación, Facultad de Informática, Universidad Complutense de Madrid Profesor José García Santasmases s/n 28040, Madrid, Spain

fpeinado@fdi.ucm.es, pgervas@sip.ucm.es

The most important problem in Interactive Narrative Environments like computer games or interactive fictions is called “the interaction dilemma” [2], an inevitable conflict between the designer's determinism and the user's freedom. An interactive storytelling systems needs to structure an intensive and meaningful experience at the same time as enabling the right development of a pre-authored plot. KIIDS (Knowledge-Intensive Interactive Digital Storytelling) system represents a computational solution for addressing this problem by the application in real time of artificial intelligence algorithms on the supervision and management of the interactive storytelling process. The proposal is based on a Knowledge-Intensive Case-Based Reasoning approach that deals with narrative knowledge [3], an overview of the system architecture is presented in figure 1.

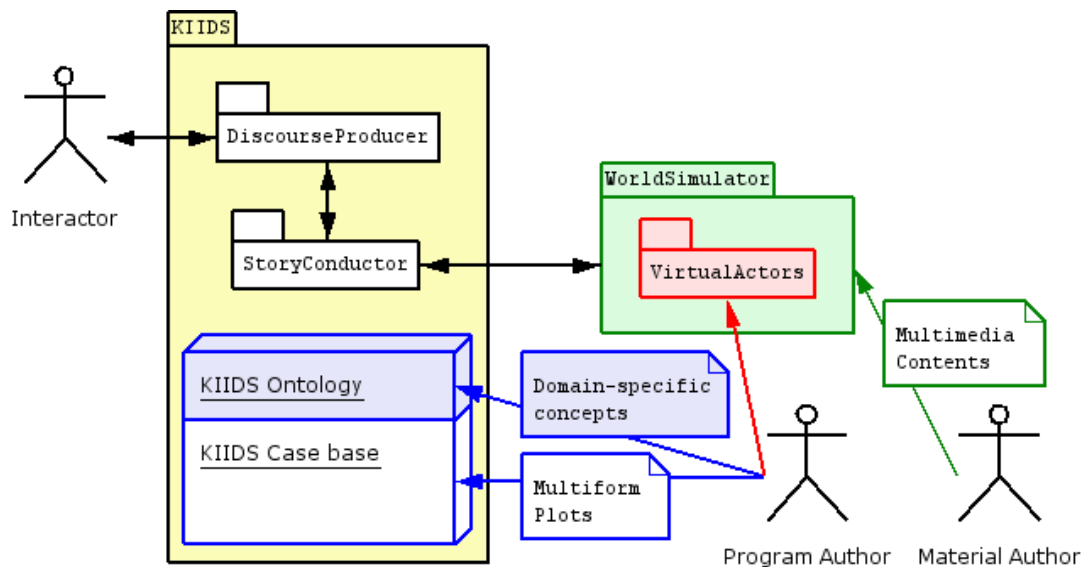


Fig. 1 Overview of KIIDS Architecture

As a result of this research we have developed an OWL DL ontology called KIIDSOnto, composed by a specific set of interrelated subontologies with important amounts of knowledge related to different domains like CBR, narratology, interactivity theory and world simulation. These are three of the most important concepts of the ontology: *IOntoThing*, *NOntoThing* and *SOntoThing*, each one is the root of the interaction, narration and simulation trees of the ontology, respectively.

Interaction tree. This part of KIIDSOnto presents concepts related to the interactor and its participation in the development of the interaction. It includes an interactor profile, basic concepts for planning like tasks, goals, etc.

Narration tree. This part of KIIDSOnto presents concepts related to the author and the audience and their participation in the development of the plot. It includes an audience profile and concepts about discourse and story *itself*, the two components of narrative from a Narratological point of view [1]. Categories of narrative events, characters and that kind of elements are represented in this tree.

Simulation tree. This part of KIIDSOnto presents concepts related to the processes that take place into the story world, entities, places and their static and dynamic attributes are represented here, using an extensible structure similar to a general-purpose ontology model.



Fig. 2 Overview of KIIDS Ontology

Figure 2 presents an overview of the organization of the ontology. Before the main trees there is another part of the ontology that deals with Case-Base Reasoning because that is the formalism KIIDS use for reasoning. This resource represents a useful contribution to the field because it sets a precedent in the formalization of models for narrative reasoning, using Protégé and Racer as the basic tools for its implementation.

Acknowledgements

The first author is supported by a FPI Predoctoral Grant from Complutense University of Madrid. The project was partially funded by the Spanish Committee of Science & Technology (TIC2002-01961).

References

- [1] S. Chatman. *Story and Discourse: Narrative Structure in Fiction and Film*. Cornell University Press, Second Edition (1986).
- [2] M. Mateas. *An Oz-Centric Review of Interactive Drama and Believable Agents*. *AI Today: Recent Trends and Developments. Lecture Notes in Artificial Intelligence*, **1600** (1997) pp. 297-.
- [3] F. Peinado, M. Ancochea, P. Gervás. *Automated Control of Interactions in Virtual Spaces: a Useful Task for Exploratory Creativity*. In *7th European Conference on Case Based Reasoning. First Joint Workshop on Computational Creativity*. CERSA, Madrid, Spain (2004) pp. 191-202.