

論文の内容の要旨

論文課題 : A Storytelling Model based on Semantic Relations and Interest Interaction
(意味的關係と興味に準じる交流に基づく物語生成法)

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In a general sense, stories are defined as unique sequences of events, mental states, or happenings involving human beings as characters or actors. Any properly constructed story always aims to deliver a particular message to its audience, and the content of this message is commonly conveyed through discrete pieces of information, referred to as events, so that users can assimilate the story in a more convenient and orderly way. Nevertheless, a story is not only defined by its content, but also by the manner this content is presented. Even though the information that defines the content of a story can be fixed, several different “told stories” may arise depending on how such information is sequenced. Storytelling is, in other words, the process by which content is conveyed to the audience in order to maximize not only its attention, but also its understanding and eagerness, and researchers have created extremely complex applications to enhance not only the manner a story can be told, but also the manner users can enforce their preferences in content presentation through interaction.

In this context, interactive storytelling (IS) models, either implicitly or explicitly, have had to deal with three major aspects in their implementations, regardless of their technology: (1) how to define events, i.e. the pieces of information that constitutes the content of any story, (2) how to present events, i.e. the algorithm that is used to convey this content to the user, and (3) how the user is to interact with the story, i.e. the variables that the user can modify in order to change the presentation of the events in content or in order. The majority of IS implementations encode in their definition of story event timing information (the range of time specified in terms of the story timeline in which the event must be presented) and interaction variables associated with that predefined timing. This approach is convenient for story presentation, but presents several restrictions in terms of story understanding if events are not adequately organized, and story dynamism since it leaves story algorithms with little or no manipulation ability to arrange the events taking into consideration the narrative appeal to the user. In this thesis, I present ISRST (Interactive Storytelling Model using RST), my proposal for a storytelling model based on the organization of generally defined events using

a subset of rhetorical relations proposed by the Rhetorical Structure Theory (RST) and the application of narrative principles and user interaction through interest to generate appealing stories.

The thesis document is composed by eight chapters, which provide the background and starting point for my research, description of the storytelling conceptual framework, and the demonstration of the results of my work. The contents of each chapter are outline below.

- Introduction: This chapter is the introduction of my thesis, in which I describe the essential concepts of a story and give proper fundamentals for the value and approach of my work. It also describes the structure of this thesis.
- Storytelling Application Models: This chapter describes the current state of the art in storytelling applications organized by the way these applications contribute to the field in terms of event sequencing and event interaction, two keys aspects for any storytelling model.
- Attributes for a Generalized Semantic Storytelling Model: This chapter details the model attributes that were considered in order to have a generalized storytelling model and why they are needed.
- The Role of User Interest in the Storytelling Process: This chapter details the role of the user's interest in the storytelling process, its definition and principles regarding its relation with the story itself. It also describes how it is calculated in my model and the assertiveness of this calculation compared to other well known methods.
- The ISRST Semantic Ontology Model: This chapter describes ISRST, the application I developed, by emphasizing its design components (story ontology, narrative functionality, interest calculation, and story generation)
- The ISRST Application – Implementing on the Web: This chapter describes the web implementation of ISRST.
- ISRST Story Testing and Analysis: This chapter describes the analysis' results of ISRST by using two real stories with different objectives. I present the details of the construction of each story and the interest data I collected so far.
- Conclusions and Future Research Directions: This chapter states the conclusions of the research work, highlighting discussions about each component of the model and future work that may contribute to enhance the present version.

Appropriately selected features give the application a solid base as a storytelling framework and flexibility in story implementation, including:

- The utilization of OWL class structures to define major story components. Although the current functionality is limited to object searching and attribute extraction, the use of this semantic tool gives ISRST the possibility to further encapsulate the model by implementing more complex reasoning inferences involving already implemented classes and real time parameters. In addition, OWL provides to the story author a well-known standard way to create and implement his or her stories.
- The construction of complex multimedia content using a flexible script language called the Event Specification Language (ESL). ESL provides not only the way to personalize this content, but also a useful way to synchronize it to enhance a story's presentational effects.
- The ease of web deployment by implementing the whole application in Java.
- The implementation of a true unobtrusive interaction model through the use of interest, which not only is the most important factor in any user interaction paradigm, but also can be extrapolated to other well known types of interaction methods, such as menu selection, gamepad manipulation, command processing, action perception, etc.