

V-NaSty – Virtual Character Narrator with Story based Suspense Support

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Introduction

If one wants to narrate a story, one first has to have a story. A story comes into being, if something has happened to talk about. Heinrich Meyer told this in the book »The Art of Narration«, and this was exactly the starting point of our research. While investigating in interactive storytelling for Management Information Systems, Education, and Interactive Stories for children, we developed a story processing unit, the so called story engine, based on the semiotic principles of story, as they are told by V. Propp, a Russian formalist of literature of the early 20th century. His semiotics is based on morphologic functions, roles (*dramatis personae*), and dependencies between morphological functions, loops, and moves. The story engine uses these principles, enhances them with so called polymorphic functions to generate an interactive adaptable story from a set of story fragments. The story engine is used in several projects, but soon we found that there is a difference between having a story and narrating it, even if the story fragments are known and the story structure is well defined and interactively accessible for the user.

We used scripts to control the virtual actor performing narration of story fragments, so called scenes. Therefore, most of the acting of the virtual characters is predefined, they do not have knowledge of the story structure, all expressiveness and acting have to be handmade by 3D animators. To overcome this situation, we concentrated on the art of narration: what is the difference between narration and simply reading out loud a text.

Basics

Building immersive worlds for the audience of Virtual Reality applications means more than building 3D models and 3D animations with some built-in behavior for 3D objects.

Traditional content-based media uses dramatic structures (stories) to enhance suspense and immersion. Immersion takes place via a number of factors. We distinguish between spatial, temporal, and emotional immersion. Dramatic structures intensify the temporal and emotional immersion: The temporal immersion takes place via the expectations of the audience with regard to the experiences of the protagonist of a

German Abstract

Der V-NaSty ist ein virtueller Erzähler, welcher mit den Methoden des Interaktiven Geschichtenerzählens verschiedenste Informationen vermitteln kann. Diese reichen vom Management für Informationssystem über Interaktive Lernanwendungen bis zum Geschichtenerzählen für unsere Kinder. Um dies zu bewerkstelligen wird Information in Form von Szenen einer Geschichte abgelegt. Diese Szenen werden zu einer variablen, interaktiv beeinflussbaren Geschichtenstruktur verknüpft. Für die erzählte Geschichte sowie für jede Szene wird »on the fly« ein Spannungsmodell erzeugt. Dieses Modell besteht aus den drei Kategorien Suspense Progression, Narrative Conflict und Narrative Relevance. Mit Hilfe dieses Spannungsmodells werden Informationen effektiv durch ausdrucksstarke Mimik, Kopfbewegungen, Sprachsynchronität (in Lippenlesequalität) und Gestik (in Gebärdensprache-Qualität) des V-NaSty unterstützt und dem Publikum dauerhaft vermittelt.

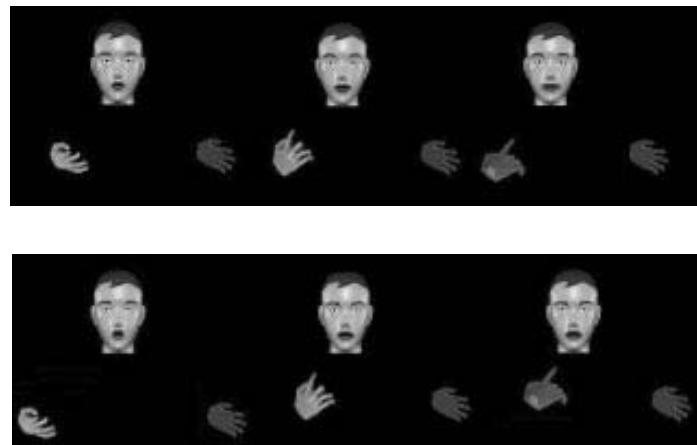


Figure 1, 2:
V-NaSty with
speech-supporting
gestures

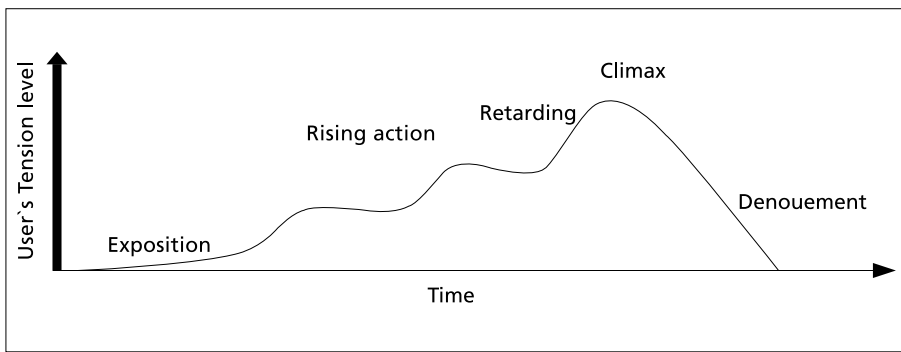


Figure 3: The dramatic structure of the Novella

story. The emotional immersion occurs via the structure of the drama itself: Typically, the first act gives an explanation of the ongoing actions and motivations of the drama's characters. The audience knows both the goals of the protagonists and what they will suffer should they not reach those goals. A typical structure for a story is called a Novella.

The Novella is of the literary category Epic (for the German language area, Goethe defines three categories: Lyric, Epic, and Dramatic), but with an internal dramatic structure: It shows events that are interpreted as turning points within the life of a protagonist; these events cause actions that rise to a climax. Therefore, the Novella offers the dramatic structure of exposition, a climax or turning point, a decline, and an end, cf. Figure 3.

The Narrator

If one uses the classic epic form of narration as a start, one will find that there is no mimetic presentation – the narrator is the central figure of the

narration, the narrative presentation of the story is only shortly broken up by actor-like play presentations of the narrator himself. As the narrator is the only one to narrate the story to the audience, he tries to catch the audience and to narrate the story in an engaging way. The narrator is on the thin line between the reality of the story and the reality of the audience, he has to tell the story in a way that both realities can come together as one. The usage of words is not enough for this task; he has to adapt his whole expressiveness to the narration. This could imply the acting of short scenes, for example by using his head to look in several directions (looking left and right to simulate a discussion of two characters, for example) or by adapting his voice to the several roles within a story. The narrator has to interpret the story and to use the most important elements of the story to raise suspense. He therefore increases the important aspects and decreases the less important aspects that could hinder the

immersion of the audience to take his audience into his story wonderland. Because of these actions, narration differs from simply reading out loud the text of a story.

Suspenseful Narration of Stories

In a few words, stories do not tell information, but they tell the truth in a couple of actions. Our approach uses the danger or problem situations to catch the audience's attention for the truth of the information presented. The suspense rises in relation to the problems that occur to the hero and the way he solves the problems. The Virtual Narrator has to understand exactly the ongoing actions and situations of the story to increase or decrease the aspects of the story. We use three concepts to understand the ongoing actions in a story.

The first one is based on the morphology of the story we use. We identify the aspects of the actions in the story and indicate suspense points for several morphological functions and the concatenation of these functions. For example, the fight of the hero against his opponent is one of the most suspenseful functions of a story. The hero's victory is also suspenseful, but not as suspenseful as the fight itself. Therefore we use annotations called the Suspense Progression.

The second concept uses the conflict potential between the several roles of a story. The situations, when a conflict initializes, rises, escalates, and is solved, are aspects of a story that are enlightened by a narrator;



Figure 5: Hand gestures for story part »intro of a story«

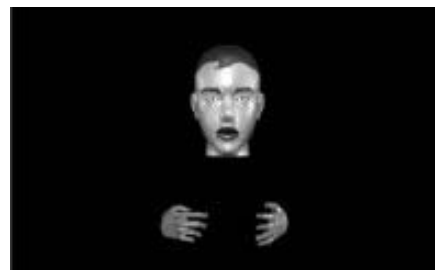


Figure 6: Hand gestures for the story part »attack of the enemy«



Figure 7: Hand gestures for the story part »start retaliation«

they are more substantial for the story than the actions that are used to keep the believability of the story on track. We call these annotations the Narrative Conflict.

The third concept takes into account the relevance of a function for the ongoing story. For example in the Grimm's tale: if the audience does not notice the birds eating the bread of Hänsel and Gretel, they would not know why the kids are lost in the deep, dark forest. The narrator should use this accentuation to raise the audience's expectations. The annotation is the Narrative Relevance.

These three concepts are used to give the virtual narrator an understanding of the story. With this understanding, it can adapt its expressiveness and therefore its speech, gaze, head movement, and gestures to the story, as shown in figure 1 and figure 2 – two different forms of expressiveness of the same gesture and wording / speech of V-NaSty.

Figures 5 to 8 show how the V-NaSty adapts to different parts of a story, for example from introduction via the climax to the end of a story.

Development

The system contains three general parts, cf. figure 4:

- The story part, given as the story model, the story content, and the story engine.
- The behavior part, given as the text module, basic behavior and speech acts module, as well as the behavior manager (coupled with the behavior rules) and the gesture manager (coupled with the gesture meta data).



Figure 8: Hand gestures for the story part »struggle with the enemy«

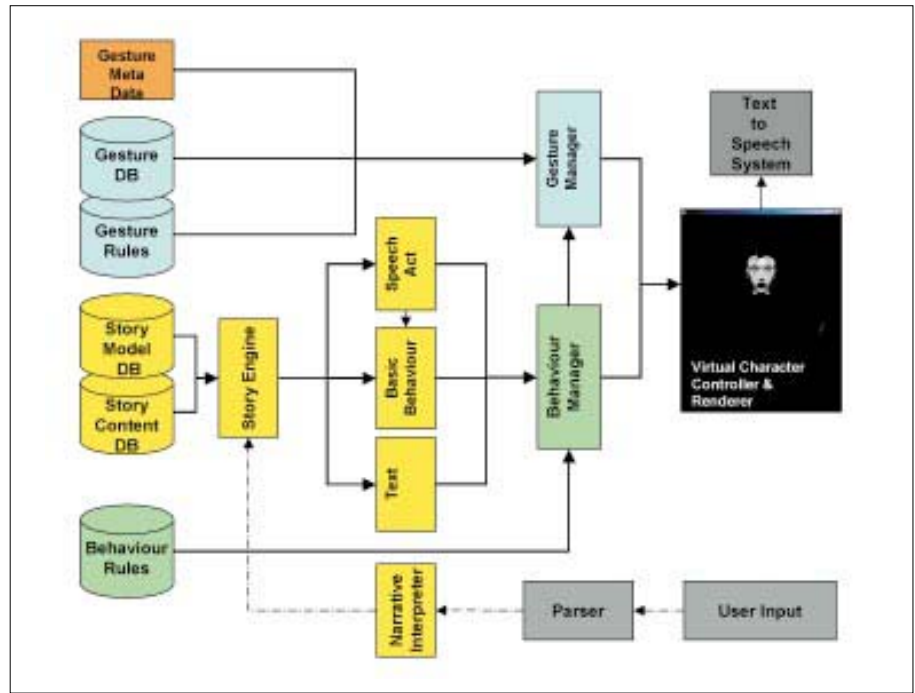


Figure 4: Architecture of the V-NaSty System

- The virtual character with a text to speech system and synchronized lip movement, facial expression, and hand gestures.

The information (the content) is stored in the Story Content DB as scenes. These scenes are selected by the Story Engine, get enriched with suspense annotations and are transferred, via the Basic Behavior, Text, and Speech Act modules to the Behavior Manager. There the suspense information is calculated to form expressiveness and used to control the Virtual Character.

We evaluated the gesture support for stories with a focus on the question about the adequateness of the gestures for the narrative situations.

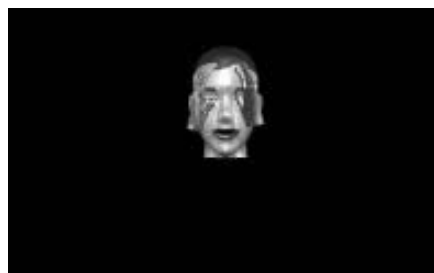


Figure 9: Hand gestures for the story part »victory of the hero«

Several tests were done with up to 14 users. The evaluation results were very promising: Almost every user felt a better understanding for the narrative situations presented by the V-NaSty. More than that, when asked how they liked a scene presented with or without support of the expressiveness of the virtual narrator, users always chose the expressiveness supported scene as their favorite.

Conclusion

With the so called V-NaSty, a Virtual Character narrator with story based suspense support has been developed that offers new possibilities to tell information to all kinds of people. If for management, for education, or for children – the V-NaSty can produce a presentation of narrative expressiveness that keeps the information in the minds of the audience.

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