

Scene-Driver: An Interactive Narrative Environment using Content from an Animated Children’s Television Series

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Abstract. Narrative theories are often employed to provide coherence to collections of resources as well as in the creation of models of interactive drama. Scene-Driver is an interactive narrative system which combines these two approaches in the form of a game. The game reuses scenes from a children’s animated television series called Tiny Planets. A child interacts with a Scene-Driver narrative by selecting “domino-like“ tiles, the right-hand side of which dictates certain properties of the next scene to be played. Narrative coherence is maintained by ensuring that a certain ordering of scenes is adhered to, regardless of a child’s choice of tile, e.g. a conflict resolution cannot be shown prior to that conflict being introduced. This ordering is based on narrative principles and analysis of the 65 episodes of Tiny Planets.

1 Introduction

Pepper’s Ghost production company have produced a children’s animated television series called Tiny Planets. The show tells of the adventures of two space aliens called Bing and Bong, who travel amongst a group of “tiny planets” on a large white sofa and embark on adventures with the local inhabitants of the planets. In total, there are 65 Tiny Planets episodes, each containing approximately three minutes worth of novel animated content. Animated television series incur high production costs which necessitate additional merchandising, since the costs are difficult to recoup solely through selling the series.

An option for producing this extra merchandise is to reuse the existing content from the television series to create a novel narrative. Some games based on children’s television series have “viewing galleries” where children can select and view their favourite clips from the programme. However, it was our intention to extend this approach by structuring the content using narrative principles in order to provide a coherent experience. Scene-Driver was developed to enable the construction of novel narratives, using canned content in the form of scenes from a television show, whilst enabling a child to interact with and thereby influence the narrative flow. It has been developed and tested using the Tiny Planets content. Since the intended users are 5-7

year old children, a further requirement was to develop a suitably intuitive interface for use by children of these ages.

2 Potential Approaches to Interactive Narrative

		Content	
		Canned	Generated
Child	Passive	TV Show	Unfavourable
	Active	Scene-Driver	Future....?

Fig. 1. Potential Approaches to Creating Interactive Narrative

Figure 1 shows the potential approaches to creating an interactive narrative using the content of the Tiny Planet’s television series. Considering the “passive-generated” category, there are arguments as to why this approach is unfavourable. When developing an episode of Tiny Planets many creative decisions are made which produce dramatic effect and which can enhance the entertainment value of an episode (e.g. which camera angle to use and how to edit between shots). To formally capture knowledge at this level such that it can be used computationally is by no means a trivial task and the benefits of doing so are unclear. The child would merely be a passive observer of a novel, but potentially second-rate, episode of Tiny Planets. For this reason it would seem that the second category, in which the child interacts with the narrative as it progresses, is the more favourable approach. The current version of Scene-Driver falls into the “Active - canned” category, using the existing scenes from the series which are joined together by activities involving the child. This has enabled the development and testing of the “narrative” aspect of the model, whilst future work will move the model into the Active-Generated category by replacing the canned scenes with novel plot-level scenes.

3 Using the Content of the Tiny Planets television series

The 65 episodes of Tiny Planets were analysed in order to devise a means for identifying and describing scenes in terms of narrative principles. We devised a plot description based on narrative theory and this analysis. We believe that this form of description would be applicable for describing a broad range of television series, for the purpose of implementing them within Scene-Driver. The analysis suggested that each episode could be viewed from several different levels, most notably a *plot level* and a *directorial level*.

The plot level contains elements that are commonly thought of as being integral to a narrative. Each Tiny Planets episode has a theme which tells the viewer the general purpose of the story, by way of a voice-over at the start of each episode. The theme

introduction element of the plot-level is the introduction of the characters and props of the theme at some point in the episode. Within each episode there is at least one conflict which must be resolved, through a successful resolution attempt, before the story can end. However, rather than ending the episode immediately a conflict has been resolved, there are one or more “postcompletion” events.

The directorial level is the level at which events occur to provide dramatic effect, such as increasing anticipation or to provide entertainment value. The success of the directorial level, such that the enhancement of the enjoyment value of an episode is achieved, depends on the creative choices made in the edit and written into the storyboard. For this reason, the directorial level is more difficult to formalise.

The analysis of the episodes informed the design of planning algorithms to support engagement and coherence, such that the most basic narrative must follow the structure “theme-introduction -> conflict-introduction -> conflict-resolution -> postcompletion-event” to ensure coherence, with comedic elements included for entertainment value.

4 Playing Scene-Driver

As mentioned previously, it is desirable that the child is an active participant in the narrative. It is therefore necessary to implement a child-friendly interface that the child can use to respond to clips they have just seen and to exert some influence over what is shown next. In Scene-Driver, the interface is based around the idea of dominoes which, instead of the usual “dots”, depict elements such as “characters” (other examples include props or actions), from the television series. The child interacts with the system by placing a tile that has a left-hand side which matches the scene they have just seen. The right-hand side of the tile specifies what will appear in the next scene. In this way, the child is able to manipulate the direction of the narrative, whilst a “scene-supervisor” module ensures that the narrative adheres to the principles of conflict introduction, resolution, comedic moments etc. The scene-supervisor also ensures coherent transition from one scene to the next by way of “transitional scenes”, such that if a character that was not in a previous scene is to be in the next scene, that character is seen to “arrive”. Conversely, if a character was in the previous scene and is not to be in the next, then the character must be seen to “leave”. A theme (e.g. “shapes”) and a “difficulty level” can be chosen prior to starting a game. This refers to the matching type, of which there are three possible options. These are described below, assuming that a character tile set has been chosen.

In a complete match game, the left-hand-side of a tile matches a scene if the characters shown on the tile were present in the scene. The right-hand-side then determines which characters are present in the next scene. In this scenario, a question arises as to whether the matching should be based on the characters that are physically present on screen in the final shot of the scene or on those characters assumed to be present (e.g a scene may finish with a close-up of a character, whilst other characters have been present right up until the close-up). We refer to these two distinct methods

of matching as either implicit (matching to all characters present throughout) or explicit (matching only to characters that are present at the start and end of scenes).

In a rewrite rule game, the left and right-hand sides of the tile have a different meaning to that of the complete match game. In this game, whichever character(s) are depicted on the left-hand side of the tile are to be “voted out” and then “replaced” – in the next scene - with the character or characters on the right-hand side of the tile. Take a scene involving Bing, Bong and a “triangle local” (a “local” is a geometrically shaped character with eyes). If a tile depicting a “triangle local” on the left-hand side and a “round local” on the right-hand side is placed against that scene, this has the meaning “in the next scene, replace the triangle local with a round local”. So instead of a scene involving Bing, Bong and a triangle local, there will be a scene involving Bing, Bong and a round local.

5 Scenario: Playing the Game

When starting the game, a scene is played on a “television” in the centre of the screen. In figure 2 this scene involves Bing and 3 flockers trying to push a ball up a ramp. In the top-left of the screen is an “inter” tile that are used in both the complete explicit and rewrite games for continuity and to aid the child in matching tiles to scenes. In a complete-explicit game this takes the form of a different coloured tile that matches the start and end state of the scene which has been played. In a rewrite game, it takes the form of a “cast-tile” which shows the cast that had been present within the previous scene and which characters are therefore available to be “replaced” in the next scene. At the bottom of the screen is a set of 8 available tiles. The child must choose a tile that has a left-hand side that matches the right-hand side of the tile at the top of the screen.



Fig. 2. Starting the game (taken from Complete Explicit)

6 Algorithm for tile-set construction

Each scene in a “scene-library” is described according to an ontology. Examples of attributes used to describe the scenes are “has-characters”, “has-props”, “has-themes”,

“has-plot-level-descriptors”. The first stage in tile-set construction is to create a sub-set of scenes which are consistent with the chosen theme. The theme may be intrinsic to the clip or may further reflect the theme of an episode or the theme of the particular planet the episode was set on. For example, a clip involving pushing a ball could be described by the themes “moving heavy objects”, “shapes” and possibly “comedic”.

The second stage is to ensure plot coherence. The simplest plot structure must have the plot elements “theme introduction” “conflict introduction” and “conflict resolution” in this order, to maintain plot coherence. More complex plot structures must still maintain this ordering, but could have additional plot elements such as “comedic events” to provide directorial consistency.

Therefore, in this stage, the sub-set of selected scenes are classified as being one of the above four plot element types. The scenes that fall into the categories “theme introduction” and “conflict introduction” are part of a “theme phase” (TP) and “conflict phase” (CP), respectively.

From the set of conflict resolutions matching the theme, one is selected to be used within this particular game (CR). This will be the successful solving of the task by the character(s) displayed if the child succeeds in creating a chain of dominoes. The rest of the set of potential conflict resolutions are discarded.

From the set of scenes in the conflict phase, the one which is the corresponding introduction of the conflict resolution chosen in the previous step (i.e. from that same episode of Tiny Planets) is selected. This will be the first scene shown in the conflict phase during any playing of the game. We refer to this scene as the conflict anchor (CA).

Of the scenes in the theme phase, one is selected as the scene to be shown before the child plays the first domino. This scene is called the theme anchor (TA). Once these have been selected all possible legal pathways between the scenes can be generated (see figure 3). Arrows show possible paths between the scenes. Some arrows are uni-directional to maintain the appropriate order in which scenes are shown, such that a child progresses from TP, through CP before reaching CR. Comedic scenes can be associated with both phases.

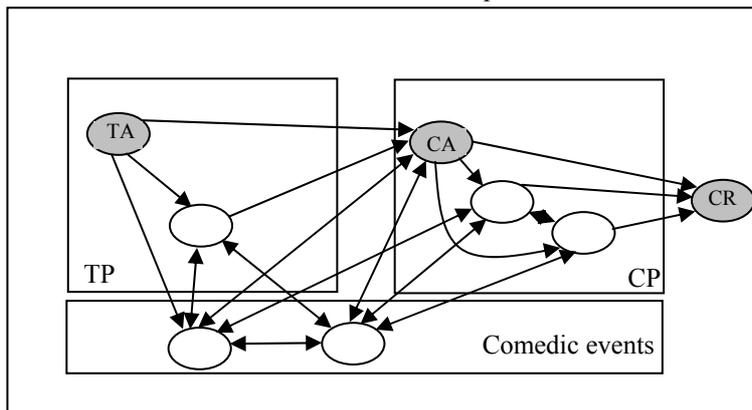


Fig. 3. Representation of the scene-subset during tile-generation

The final stage of tile-set generation is to prune this search space to eliminate tiles which would enable illegal moves during a game. Examples of illegal moves are:

- The possibility that a tile is placed in the theme-introduction phase that links only to a scene in the Conflict introduction phase other than the Conflict introduction anchor.
- The possibility that a tile can be placed which necessitates playing the conflict resolution before the conflict introduction has been played.
- The possibility that a tile can be placed in the conflict phase that links only to a scene in the Theme Phase
- A tile is available that can be placed after the conflict resolution has been played.

CONCLUSIONS AND FUTURE WORK

Scene-Driver is a tool that enables the creation of novel narrative from existing broadcast content. It demonstrates the potential for using narrative principles in the creation of new engaging narratives, with which a child can interact as the narrative progresses. Whilst the system has been implemented with content from the Tiny Planets television series, it is anticipated that the same principles and software infrastructure could be easily applied to alternative broadcast content. A second version of Scene-Driver is under development. The main difference between the current version and the later version will be at the point of interaction. Whilst in the current version the interaction occurs at the end of a scene, the interaction for version two will occur within dynamically generated scenes. There are also possibilities for introducing variability into the presentation of remaining tiles by having different characters present the tiles in different fashions, according to principles such as novelty (e.g. if they are present at the end of a scene and have yet to present tiles within that narrative) and by different methods (e.g. producing them from a hat or bag etc.). It is anticipated that further directorial elements will be introduced into transitions. For example, emotional engagement with the characters could be enhanced by showing reactions to events that have just occurred. One example could be if a character who has just presented the tiles for selection is “asked to leave” (i.e. not depicted in the right-hand side of a chosen tile) they may shrug, as if to say “I tried my best” before departing.

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