



Abstract Overview

Theoretical and Design Foundations:

Open Design Challenges for Interactive Emergent Narrative

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Abstract. We introduce a research framework for the design of interactive experiences in the domain of emergent narrative, an application area of computational narrative in which stories emerge bottom-up from the behavior of autonomous characters in a simulated storyworld. Prior work in this area has largely concerned the development and tuning of the simulations themselves from which interesting stories may reliably emerge, but this approach will not necessarily improve system performance at its most crucial level - the actual interactive experience. Looking to completed experiences, namely simulation games like Dwarf Fortress and The Sims, we identify a series of shortcomings that yield four design challenges at the level of interaction: modular content, compositional representational strategies, story recognition, and story support. In this paper, we motivate and discuss each of these design challenges and, for each, summarize prior work and propose new approaches that future work might take.

Keywords: emergent narrative · content authoring · story recognition

Design Approaches for Interactive Digital Narrative

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Abstract. While authoring has long been a concern for researchers engaged in interactive narrative, generalized design approaches have been less of a focus. At the same time, the need for design conventions to aid in the creation of artifacts has long been recognized, starting with Murray's 1997 *Hamlet on the Holodeck*. However, unlike in the related field of game design, widely accepted, generalized conventions are still elusive. In this paper I investigate the state of affairs and identify several broad trajectories in the scholarly treatment of interactive narrative authoring. I propose a process and a set of design heuristics developed in my practice of teaching interactive digital narrative.

Keywords: Interactive Narrative Authoring · Interactive Narrative Design · Design Heuristics · Design Process · Design Conventions · Interactive Digital Narrative

Reflective Rereading and the SimCity Effect in Interactive Stories

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Abstract. Reflective rereading in print literature involves a critical or meditative re-examination of a work for deeper meanings. In this paper I argue that, in interactive stories, reflective rereading can involve examining the surface of an interactive work with the aim of gaining a deeper understanding of and appreciation for how the underlying computational system functions, and how this internal structure relates to the surface experience of the work as a story. I explore this through close readings of four interactive stories: The Walking Dead (Season 1), Façade, Prom Week, and Blood and Laurels. Through this analysis, I make connections between this form of reflective rereading and Wardrip-Fruin's "SimCity Effect", suggesting a correspondence between works that afford reflective rereading and those that exhibit the SimCity effect. Further, I suggest that the abstractions used to represent the underlying system will impact whether or not an interactive story affords reflective rereading.

Key words: interactive storytelling · reflective rereading · SimCity effect
· close readings

Adaptive Storyworlds - Utilizing the Space-Time Continuum in Interactive Digital Storytelling

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Abstract. One of the challenges of interactive digital storytelling systems is to support the users' experience of being able to freely roam open sandbox-like storyworlds, while at the same time maintaining control over the distribution and order of events in the mediated narrative. However, although several investigations into how to address this challenge have been conducted, there seems to be a lack of focused research into the possibilities of using the concept of space-time continuum to organize the mediation of events. This paper will thus describe ideas, concepts and examples of how space-time may be used to organize events while maintaining narrative engagement, by introducing a suggestion for a framework, which exploits the possibilities of space-time.

Keywords: Narrative Paradox · Space-time · Engagement · Interactive Digital Storytelling · Storyworld · Emergent Narratives · Environmental Storytelling

Touchscreen Poetry. Analyzing Gestural Digital Poems

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Abstract. Interactive Poetry is a lively genre within E-Lit and interactive digital narrative that was made more accessible by the diffusion of tablets with “multitouch” screens allowing relatively complex gestural UIs on consumer-level hardware. This paper leverages pragmatist aesthetics to critically interrogate three exemplar pieces (Strange Rain, What They Speak When They Speak to Me? and Vniverse) that produce poetic effects by inviting gestural interactions. In conclusion, two critical concepts (“isomorphism” and “heteromorphism”) are demonstrated for future design and research.

Key words: Poetry · Gestural Interfaces · Pragmatism · Aesthetics · Semiotics.

Tensions of Plot in Interactive Digital Storytelling

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Abstract. This paper focuses on plot as a mediator of interactive digital storytelling (IDS). Drawing on a theory of narrative applied to IDS, the paper focuses on the manifestation of plot across three different IDS contexts. After defining plot, plot elements, and plot analysis, I explain the sampling of the three IDS types considered with plot analysis in this inquiry. The plot analyses of 116 IDS entries by youth and young adult participants within and across those IDS types revealed patterns of stability and variation of plot elements. The foundational nature of plot and its sensitivity to context outside as well as within the narrative scene is evident as participants in complex narrative systems used plot elements to communicate and to innovate. Future research can test and extend plot analysis for further application to IDS research and design.

Keywords: Interactive digital storytelling · IDS theory
· Narrative analysis of IDS · Plot analysis · Implications for IDS
design research and design

Analysis and Evaluation of Systems I:

Connecting the Dots: Quantifying the Narrative Experience in Interactive Media

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Abstract. In this paper we analyze narrative in interactive media with a special focus on emergent narrative. We detail the criteria for creation of an online questionnaire for the evaluation of emergent narrative as a subjective experience and present the result of a large scale survey in which it was applied. The survey was conducted during a three-week-period in May-June 2015, receiving answers from 14,259 people. Each participant answered based on one of the twenty games chosen for the investigation. The twenty games were chosen to meet one of three inclusion criteria's. Firstly on the usage of descriptive narrative in their communities, which indicates a strong emergent narrative experience, secondly their emergent narrative potential and thirdly for their potential to be used as comparative or baseline measurements. The results strongly indicate that the Emergent Narrative questionnaire is effective for measuring the occurrence of an emergent narrative, when compared to the test-subjects' self-reported experience.

Keywords: Emergent Narrative · Interactive Narrative · Computer Games · Narrative research · Quantifying emergent narrative · Experienced narrative · Closure · Immersion · Narrative Transport

Mise-en-scène: Playful Interactive Mechanics to Enhance Children's Digital Books

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Abstract. The inclusion of interactive content has become commonplace in many reading applications for children. Yet a growing body of research suggests that the inclusion of interactive content may distract children from the actual content of the story. Models are used to effectively integrate interactive content into reading applications to support a child's understanding of the story. This paper discusses the design of an interactive application for Omani children called *Trees of Tales*, including its use of a *mise-en-scène* inspired game mechanic to facilitate playful and meaningful engagement with the story. A trial of n=18 Omani primary school students was used to determine the impact of the design on the intrinsic motivation and engagement in comparison with printed storybooks and e-books with limited interactivity. The findings suggest that *Trees of Tales* improves children's motivation to read. There was also evidence that the application enhances reading engagement of female children in particular.

Keywords: Interactive reading application · Trees of Tales · Children's e-books · Arabic children · Omani children · Intrinsic reading motivation · Reading for pleasure · Digital books. *Mise-en-scène*

Poster Presentations:

Students as Game Designers: Learning by Creating Game Narratives in the Classroom

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Abstract. This paper explores the role of game narrative for learning when elementary school students design their own computer games in the classroom. The paper is based on data from a research project where one 6th grade class and one 7th grade class designed their own computer games in the classroom, related to concepts from their social studies curriculum. Data was collected through video observation, and analyzed using interaction analysis. In this short paper, selections of the initial findings are summarized, to show how the process of creating the game story, designing the game world and developing game characters might impact the students' learning outcomes.

Keywords: Game design · learning · storytelling

How Cognitive Niche Construction Shapes Storytelling? An Investigation of e-picturebooks as Cognitive Artifacts

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Abstract. Here we introduce a theoretical framework for investigation of the cognitive and semiotic nature of digital storytelling. Our approach analyzes e-picturebooks (digital picturebooks) as cognitive artifacts and their impact on cognitive niche construction. Cognitive artifacts have the power both to create new problems and to create means for solving these problems. When both these aspects are taken into account, cognitive artifacts can be seen as shaping cognition itself: endowing it with both needs and capabilities, creating ever more specialized tools to deal with ever more specialized tasks. We investigate (i) how the problem space of storytelling is structured on cognitive artifacts, (ii) what are the specific semiotic features of e-picturebooks and how these features can alter storytelling production and interpretation, and (iii) how these alterations influence general cognitive abilities regarding storytelling tasks.

Keywords: e-picturebooks · cognitive artifacts · cognitive niche · cognitive semiotics

Target BACRIM: Blurring Fact and Fiction to Create an Interactive Documentary Game

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Abstract. Target: BACRIM is an immersive and interactive documentary game that exposes the atrocities of Colombia's paramilitary forces in one of its most violent regions. The producers combine both non-fiction and fiction to create a game that places the user at the heart of the story. Through this *docufiction*, which is anchored in augmented reality, the user or participant experiences danger firsthand.

For the user, this violence is a game. For the people who live in this region, it is a reality. Target: BACRIM wants to blur that distinction. We therefore create a world, where fiction and non-fiction are interrelated, where genres merge and where individual disciplines escape the shackles of tradition to converge and create an interactive documentary that places user experience at its core.

Keywords: interactive non-fiction · interactive documentary · augmented reality · journalism · games · Newsgames

Connecting Cat - A Transmedia Learning Project

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Abstract. In this paper we present an overview of a transmedia learning project. As part of an ongoing research project, Connecting Cat provides glimpses of a story taking place in the material, physical world, and the imaginary world through image, sound and text. Specifically targeted to English as Second Language students, the project supports entry points for learning through immersion in an adventure story and engagement in multimodal learning activities.

Keywords: ESL · language learning · transmedia storytelling

Collaborative Storytelling in Unity3D Creating Scalable Long-Term Projects for Humanists

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Abstract. While storytelling and narratology have long been the domain of humanists, creating and exploring narratives using a video game platform poses unfamiliar challenges for team coordinators used to working alone with traditional media. Issues to overcome include training collaborators on technology, mutually accessible storage, prevention of data loss, and version control. This poster describes a process used to create a dynamic and scalable team for a long-term project using video games to explore medieval texts.

Keywords: Unity3D, Mixamo, Photoshop, Perforce, collaboration, training, videogames, storytelling, teams, project planning.

Tell a Story about Anything

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Abstract. With the fast development of internet technology, people can have easy access to a massive amount of information. The goal of this project is to provide a personal assistant for helping people explore large network of information by using narrative technologies. We propose an automated narration system that takes structured information and tailors the presentation to the user. It is aimed at presenting the information as an interesting and meaningful story by taking into consideration a combination of factors including topic consistency, novelty, user interests, and the user's preferences in exploration style. We present preliminary results of using this system for presenting information about the 2008 Summer Olympics Games, followed by discussion and future work.

Keywords: Data Exploration · Novelty · User Preferences

Investigating Narrative Modelling for Digital Games

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Abstract. In this article, we discuss the notion of context from the perspective of narrative articulation or authorial trajectories in digital games. We conduct a survey of narrative contextual considerations in digital games and investigate the possibilities for Non-Player-Characters (NPCs) to react to players accordingly, particularly with respect to narrative situations, in both a consistent and coherent fashion. After which, we then discuss the foundations of a narrative context-based model for NPCs for digital games and interactive digital narratives (IDN).

Keywords: Interactive Digital Narratives · Digital Games

Telling Non-Linear Stories with Interval Temporal Logic

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Abstract. Authoring a consistent interactive narrative is difficult without exhaustively specifying all possible deviations from the main path of a story. When automatically generating new story paths, it is important to be able to check these paths for consistency with the narrative world. We present a method of describing the structure of a story as a Kripke structure using Interval Temporal Logic. This allows the model checking of each possible telling of the narrative for consistency with the story world, as well as the ability to construct re-usable story components at different levels of abstraction. This is the first step towards building a fully checkable framework for building story components using modal logic.

Keywords: interactive narrative · model checking · modal logic · interval temporal logic · kripke structures

Opportunities for Integration in Interactive Storytelling

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Abstract. While several Artificial Intelligence techniques have been applied fruitfully in the context of interactive storytelling, few projects to date have attempted to integrate many of them into a single, cohesive system. Meanwhile, the call for better integration across related research groups has intensified in recent years, with the goal of crafting new systems that benefit from the advancements of diverse lines of AI research. In this paper, we identify several key technologies in this area and propose a high-level approach that may facilitate their integration.

Demo Presentations:

The Quality System - An Attempt to Increase Cohesiveness Between Quest Givers and Quest Types

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Abstract. In this article, we present our efforts to try to increase cohesiveness and connectivity between quests generated by a recreation of an existing procedural quest generation system, with an addition of a progressive tier system called Quality System. A study gave strong indications that the Quality System successfully produced a positive effect on the feeling of cohesiveness and connectivity between the generated quests amongst Role-playing- and Massively Multiplayer Online games players.

Keywords: Procedural Content Generation · Cohesiveness · Quests

No Reflection - An Interactive Narrative

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Abstract. No Reflection is an interactive, non-linear narrative based upon the short story Uden Spejlbillede (translated to No Reflection) written by Katharina B. Mortensen and published in the magazine Himmelskibet no. 28 in 2011 [1]. This paper demonstrates how the linear short story Uden Spejlbillede were made into an interactive, non-linear narrative. In order to do this, is the structure the directed network used, while maintaining the original linear storys format of a diary. The non-linear narrative was created using the game engine Unity3D and a plugin called Fungus.

Keywords: interactive narrative · non-linear · short-story · choices · authoring
· didascalic narrative · No Reflection · Uden Spejlbillede

Bird Attack: Interactive Story with Variable Focalization

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Abstract. In this paper we present our working example of an interactive story using the notion of variable focalization. In our interactive story the readers can experience the change of PoV (Point of View) while reading. To ensure that changing PoV creates sufficient conflicts and dynamics among characters, Greimas's Actantial Model was applied to the story creation process. The final story was realized as a form of hypertext branching narrative using Inklewriter¹.

Keywords: Interactive Story Variable Focalization • Point of View • Inklewriter
• Grei-mas's Actantial Model

Current and Future Usage Scenarios and Applications:

Urban Games and Storification The “Being Grunberg” Case Study

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Abstract. As it is the player who expands the urban game spatially, temporally, and socially, we hypothesize that it is also the player who can establish an expanded story space and provide the urban game with a narrative that suits its limitless nature and, simultaneously, the player’s story needs and expectations. We developed and tested an urban game, *Being Grunberg*, to investigate the relation between interaction, storytelling, and story forming in real world environments.

We outline the game design, describe the actual game play, and provide an analysis of the game. The major finding is that urban games facilitate and stimulate storification, but the design of the player role has a significant influence on this process, both during play as well as in post-play reflection.

Keywords: urban games · narrative · interaction · storytelling · story creation · Storyfication

New Dimensions in Testimony: Digitally Preserving a Holocaust Survivor's Interactive Storytelling

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As survivors dwindle, what will this mean
for memories of the Holocaust?
The Independent [6]

Abstract. We describe a digital system that allows people to have an interactive conversation with a human storyteller (a Holocaust survivor) who has recorded a number of dialogue contributions, including many compelling narratives of his experiences and thoughts. The goal is to preserve as much as possible of the experience of face-to-face interaction. The survivor's stories, answers to common questions, and testimony are recorded in high fidelity, and then delivered interactively to an audience as responses to spoken questions. People can ask questions and receive answers on a broad range of topics including the survivor's experiences before, after and during the war, his attitudes and philosophy. Evaluation results show that most user questions can be addressed by the system, and that audiences are highly engaged with the resulting interaction.

Keywords: video · natural language dialogue · Holocaust survivor testimony

Novel Dramatic and Ludic Tensions arising from Mixed Reality Performance as exemplified in Better Than Life

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Abstract. We observe that a Mixed Reality Performance called Better Than Life gave rise to novel dramaturgical and ludic possibilities that have not been observed elsewhere. Mixed Reality Performance is an emergent genre that takes many forms, in this case a live experience for a small group of physical participants (PP) and a larger group of online participants (OP). Both groups were offered individual and collective interactions that altered the narrative in real time. A mixed methodology approach to data generated during the performance has identified two key moments where both physical and online participant groups are split into many subgroups by ongoing live events. These events cause tensions that affect the trajectories of participants that make up their experience. Drawing on literary, theatre, cinema and digital game criticism we suggest that the possibilities for engagement in Mixed Reality Performance are exponentially greater than those available to previous media.

Keywords: interactive storytelling • mixed reality • live streaming • real-time Interaction

Film Education for Primary-School Students Interactive Storytelling as an Educational Approach to Raise Awareness of Design Structures in Feature Films

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Abstract. As students are consuming video content to a high degree without parental or other forms of guidance, we want to develop an interactive learning environment that supports media literacy with respect to video design. We argue that the reflection of design components and aesthetical structures are relevant also for younger students. In order to foster the perception of formal structures and raise awareness of different design qualities, we consider a pragmatic approach. This approach encourages experimental exploration and creative activities. We pursue a concept of gamification, which enables playful participation based on the freedom of exploration. It is assumed that a playful activity involving film design components as variable structures can enhance an aesthetic and therefore more abstract perception of the presented film plots. The core concept behind the educational application is built upon an interactive storytelling tool, which allows the creation of different variations of the same story.

Keywords: gamification • interactive storytelling • pragmatic didactics • aesthetic education • film design

Enabling Instrumental Interaction through Electronics Making: Effects on Children's Storytelling

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Abstract. The electronics Making phenomenon, spearheaded by the introduction of open source microprocessors and 3D printers, has been quickly infiltrating into children's domains, but how Making interacts with storytelling has not been addressed. This paper achieves the following: it proposes the argument of instrumental interaction for Making-based storytelling, it details a custom Maker kit that integrates Making with storytelling, and it presents a study that investigates the effects of electronics Making-based storytelling on the semantics of children's puppet stories. Analysis results showed that the LED instrumental interaction contributes significantly to the children's story meanings.

Keywords: Storytelling · Making · Authoring · Children · Interactivity · Maker Theater

Social Media Fiction Designing stories for social media

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Abstract. This full-day workshop presents a process for the design of fictional stories on social media, where the plot can guide the narrative and interactive experience. Activities and discussions build on the idea that the structure of the most renowned social media profiles - i.e. Facebook, Twitter, Instagram - can be considered as a narrative structure based on storytelling and sense-making, in which forms of micro narratives can be elaborated. Working with both professionals and academics, the main goal of the workshop is the research for new expressive, narrative and interactive ways to engage with the audience, harnessing potentialities and limits of social media storytelling.

Keywords: Mobile Storytelling, Social Media Storytelling, Design Research

Analysis and Evaluation II:

Story Immersion in a Gesture-Based Audio-Only Game

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Abstract. We report on the results of a study on immersion in an audio-only game with touch-less gesture interaction. A structured design approach to audio feedback that considers the story-context leads to different design approaches: explicit instructions on the one hand and diegetic environmental feedback on the other. Further, we distinguish audio feedback before, during, and after gestures as part of the approach. Two corresponding versions of a gesture-based audio-only story have been implemented and evaluated regarding immersion using a questionnaire study. The findings indicate that replacing explicit audio instructions for hand positions and movements with responsive audio feedback for suggesting interaction methods using environmental story-related audio cues leads to measurably higher story immersion.

Keywords: immersion audio-only gesture interaction touchless motion control responsive feedback.

Towards Measuring Consistency across Transmedial Narratives

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Abstract. Interactive Digital Storytelling has a role to play in transmedial story-telling and yet there is no instrument to measure one of the critical success factors of such narratives: consistency. This short paper explores what is meant by consistency in this context and identifies it as being a subjective evaluation, part of the user experience. A consistency scale is hereby being proposed to measure user experience across media and invites feedback, suggestions, and discussion on its implementation. Its application will assist IDS designers in determining the success of their narrative game's role in a target transmedia production.

Keywords: Interactive Digital Storytelling · Transmedia storytelling · Consistency · User Experience

Interaction in Surround Video: The Effect of Auditory Feedback on Enjoyment

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Abstract. This study investigates whether an interactive surround video is perceived as more enjoyable when there is some auditory feedback on interactive moments. We constructed a questionnaire that measured presence, effectance, autonomy, flow, enjoyment, system usability, user satisfaction and identification, filled in by two groups of respondents who had either watched an interactive movie on Oculus Rift with feedback sounds, or a version without. Our results show that users rated presence significantly lower in the feedback condition. We rejected our hypothesis, that auditory feedback would increase the perception of effectance.

Keywords. Interactive cinema · video games · presence · immersion · enjoyment · flow · surround video · Oculus Rift

Generating Side Quests from Building Blocks

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Abstract. Computer games are an important application area for interactive storytelling. In a large subset of games, quests — tasks that the player is assigned to complete — are the primary driving forces of the storyline. The main storyline is usually accompanied by a number of optional side-quests. We present a system for generating side-quests based on chaining simple building blocks, akin to the branching narrative approach to interactive storytelling. Our primary interest was how far can we get with such a simple approach. The simplicity of our system also lets game designers retain more control over the space of possible side-quests, making the system more suitable for mainstream computer games. We implemented the system in an experimental game and compared the quests generated by the system with hand-picked and random sequences of building blocks. We performed two rounds of player evaluation ($N_1 = 21$, $N_2 = 12$), which has shown promising results.

Keywords: quests · computer games · role-playing games

What Makes a Successful Emergent Narrative: The Case of Crusader Kings II

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Abstract. Though sometimes placed in opposition to digital games with authored narratives, simulation games and their primarily emergent narratives do not necessarily lack emotional depth and complexity, and can engage players in intellectually and emotionally engaging narratives. Through the close analysis of Paradox Development Studio's highly successful grand strategy game *Crusader Kings II*, we examine how the various layers that constitute that game's narrative as well as specific game mechanics assist in the creation of highly individualized narratives of play. By deploying hybrid narrative techniques that rely as much on the systems of the simulation as they do upon the actions of ambitious autonomous agents and scripted vignettes, *Crusader Kings II* provides a striking example of how a game can strive to accurately depict a historical period as well as the complexities of its social, cultural, and familial structures, and succeed in crafting engaging interactive stories out of this simulation.

Keywords: emergent narrative · digital games · simulation · emotion · family

Evaluation of Yasmine's Adventures: exploring the sociocultural potential of location aware multimedia stories

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Abstract. This paper describes Yasmine's Adventures, a location aware multimedia story designed as a location based service for a museum. Yasmine's Adventures follows a young local girl (Yasmine) through a series of short animated adventures, tailored specifically to engage visitors in exploring the relatively neglected streets of the area in which the museum is situated. Yasmine's perceptions of the landmarks, identified by community members themselves, reflect the real concerns of the community. Results from the evaluation of the user's experience suggest location connection and perception changes when locative media narratives include learning, understanding and discovery elements.

Keywords: Location based services and experiences · Mobile socially driven storytelling · Interactive narrative · Digital storytelling · Location aware virtual reality · Urban computing

Technical Advances:

The Moody Mask Model

A Hybrid Model for Creating Dynamic Personal Interactions in an Interactive Setting

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Abstract. This paper proposes a new relation model, called "The Moody Mask model", for Interactive Digital Storytelling (IDS), based on Francesco Osborne's "Mask Model" from 2011. This, mixed with some elements from Chris Crawford's Personality Models, is a system designed for dynamic interaction between characters in an interactive setting. The system was evaluated with a quantitative study investigating the impact of interactivity, with some open-ended questions for qualitative analysis. Furthermore, it was compared with other IDS applications, using the common evaluation method "UxTool". We found that the Moody Mask model was not significantly improved by adding interactivity, except in a few logical areas. It also performed worse than other IDS applications in all areas. The participants reported issues with the lack of feedback from direct actions, repetitive actions, and problems with the story scenario and UI. With these issues solved, though, there are indications that this model might have potential.

Keywords: The Mask Model · Personality Models · UxTool · Characters · Relations · Interactive Digital Storytelling · AI

Tracery: An Author-Focused Generative Text Tool

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Abstract. New communities of generative text practitioners are flourishing in novel expressive mediums like Twitterbots and Twine as well as the existing practices of Interactive Fiction. However, there are not yet reusable and extensible generative text tools that work for the needs of these communities. Tracery is an author-focused generative text tool, intended to be used by novice and expert authors, and designed to support generative text creation in these growing communities, and future ones. We identify the design considerations necessary to serve these new generative text authors, like data portability, modular design, and additive authoring, and illustrate how these considerations informed the design of the Tracery language. We also present illustrative case studies of existing projects that use Tracery as part of the art creation process.

A semantic foundation for mixed-initiative computational storytelling

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Abstract. In mixed-initiative computational storytelling, stories are authored using a given vocabulary that must be understood by both author and computer. In practice, this vocabulary is manually authored ad-hoc, and prone to errors and consistency problems. What is missing is a generic, rich semantic vocabulary that is reusable in different applications and effectively supportive of advanced narrative reasoning and generation. We propose the integration of lexical semantics and commonsense knowledge and we present GluNet, a flexible, open-source, and generic knowledge-base that seamlessly integrates a variety of lexical databases and facilitates commonsense reasoning. Advantages of this approach are illustrated by means of two prototype applications, which make extensive use of the GluNet vocabulary to reason about and manipulate a coauthored narrative. GluNet aims to promote interoperability of narrative generation systems and sharing corpus data between fields of computational narrative.

Keywords: Computational Storytelling · Natural Language · Semantics

Authoring Background Character Responses to Foreground Characters

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Abstract. This paper presents a flexible and intuitive authoring interface for specifying the behaviors of background characters and their reactions to user-controlled foreground characters. We use an event-centric behavior authoring paradigm and provide metaphors for altering the behavioral responses using conditions, modifiers, and contexts. The execution of an event (an interaction between multiple characters in the scene) is governed using authored conditions on the state of the participating characters, as well as the history of their past interactions. Our system monitors the ongoing simulation and the actions of foreground characters to trigger plausible reactions in the background characters as events, which satisfy user-authored conditions. Modifiers allow authors to vary how events are perceived by specific characters, to elicit unique responses. Contexts provide a simple mechanism to add behavior modifiers based on the current location of the characters. We demonstrate the benefits of our approach by authoring a virtual populace, and show the design of simple background activity, to more complex multi-agent interactions, that highlight the ease and flexibility of specification.

Keywords: behavior trees · behavior authoring · background characters

Automatic annotation of characters' emotions in stories

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Abstract. The emotional states of the characters allow the audience to understand their motivations and feel empathy for their reactions to the story incidents. Consequently, the annotation of characters' emotions in narratives is highly relevant for story indexing and retrieval but also editing and analysis. In this paper, we address the construction of tools for the annotation of characters' emotions in stories, opening the way to the construction of a corpus of narratives annotated with emotions.

Keywords: emotion annotation · narrative corpora · emotion appraisal

Hybrid Books for Interactive Digital Storytelling: Connecting Story Entities and Emotions to Smart Environments

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Abstract. Nowadays, many people use e-books, having high expectations regarding their reading experience. In the case of digital storytelling, enhanced e-books can connect story entities and emotions to real-world elements. In this paper, we present the novel concept of a Hybrid Book, a generic Interactive Digital Narrative (IDN) artifact that requires seamless collaboration between content and smart devices. To that end, we extract data from a story and broadcast these data in RDF as Linked Data. Smart devices can then receive and process these data in order to execute corresponding actions. By following open standards, a Hybrid Book can also be seen as an interoperable and sustainable IDN artifact. Furthermore, according to our user-based evaluation, a Hybrid Book makes it possible to provide human sensible feedback while flipping pages, enabling a more enjoyable reading experience. Finally, the participants positive willingness to pay makes it possible to generate more revenue for publishers.

Keywords: e-Books · EPUB 3 · Interactive Digital Narrative · Semantic Web · Smart Living Environments

Narrative Review Process: Getting Useful Feedback on Your Story

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Abstract. Getting useful feedback on the narrative of a game can be notoriously difficult: by the time a playtester can experience the story in your game, it's usually already too late to make any significant changes. With this in mind, we developed a method which allows Ubisoft to apply a simple research methodology on a game's story, early enough for it to be valuable for the writers working on it. This paper defines common difficulties of properly testing narrative in games, and then explains the methodology developed and explains how it was success-fully used on Ubisoft productions to generate actionable feedback.

Keywords. user research · narrative · review · user testing · video games

Remember That Time? Telling Interesting Stories from Past Interactions

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Abstract. Sociability is a human trait that plays a central part in relationships over time. Today, humans are increasingly in long-term interactions with intelligent agents, which have proven most useful when they are sociable. Such sociability requires the agent to remember and appropriately refer to past interactions. A common way in which humans refer to their past interactions and collaborations is through storytelling.

Such stories, often abbreviated, include a small set of interesting and extraordinary events. We propose the design, development and preliminary evaluation of a generic computational architecture for finding and retelling such interesting event sequences. Our system mines interesting interaction episodes in a corpus of prior interactions. Initial evaluation of interactions selected by the system for retelling are encouraging. A future goal of the research is to support collaborative composition of stories about prior interactions between humans and agents in a mixed-initiative framework to produce interesting retellings.

Keywords: Social interaction · Storytelling · Story generation · Human-robot interaction · Narrative content selection

Revisiting Computational Models of Creative Storytelling Based on Imaginative Recall

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Abstract. Certain story generation systems consider the processes of imaginative recall and adaptation as central to human creativity in storytelling. Researchers have recently compared the output of these systems through the lens of Boden's types of creativity [9]. This comparison highlights the contribution of predefined structures to story predictability, which influences perceived creativity. We revisit the connection between knowledge structures and story predictability, and compare Minstrel's use of knowledge structures versus the use of Story Intention Graphs (SIGs) as the underlying case frames. Semantic information encoded in the SIG produces coherent stories and retains the imaginative recall and generalization aspect of Minstrel's creative process. Mapping knowledge structures to SIGs enables the use of a common representation that is directly connected to surface realization. This opens up the performative aspect of creativity that does not come out in templated text outputs.

Keywords: case-based reasoning · computational creativity · story generation

Using a Controlled Natural Language for Specifying the Narratives of Serious Games

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Abstract. Creating serious games calls for a multidisciplinary design team, including game developers, subject-matter experts, pedagogical experts, and narrative designers. However, such multidisciplinary teams often experience communication and collaboration problems due to the different terminologies, backgrounds and concerns of the people involved. To overcome these problems, we propose the use of a Controlled Natural Language (CNL) in combination with a graphical notation for modeling game narratives. The use of a CNL provides an easy human-readable, yet flexible and expressive way to specify story-lines. In addition, a CNL provides the possibility for automatically processing story-lines and generating code. As such, incorporating CNL in the design process also contributes to shortening the development time.

Keywords: domain specific modeling language · controlled natural language · game narrative

Creative Help: A Story Writing Assistant

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Abstract. We present Creative Help, an application that helps writers by generating suggestions for the next sentence in a story as it being written. Users can modify or delete suggestions according to their own vision of the unfolding narrative. The application tracks users' changes to suggestions in order to measure their perceived helpfulness to the story, with fewer edits indicating more helpful suggestions. We demonstrate how the edit distance between a suggestion and its resulting modification can be used to comparatively evaluate different models for generating suggestions. We describe a generation model that uses case-based reasoning to find relevant suggestions from a large corpus of stories. The application shows that this model generates suggestions that are more helpful than randomly selected suggestions at a level of marginal statistical significance. By giving users control over the generated content, Creative Help provides a new opportunity in open-domain interactive storytelling.

Keywords: open-domain interactive narrative · writing aids · natural language generation