The stone of madness meets AI

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Abstract

In this paper we argue that the computational creativity community would benefit by working together to create a methodology for a systematic assessment and comparison of our creative agents. To achieve this goal, we suggest collaborating with experts in real-world environments to develop what we refer to as Rich Creative Environment Experience (RICEE). We describe a work in progress, where two artists and one CC scientist collaborate, to illustrate a possible way to build a RICEE. Based on this experience, we suggest some initial steps to start the development of this methodology. Thus, the purpose of this paper is to motivate the CC community to collaborate in the development of a methodology for the design and implementation of RICEEs.

Introduction

Pérez y Pérez and Ackerman (2020) point out the importance of bringing computational creativity (CC) artifacts to the general public. They claim that this practice provides insights that are necessary for the advancement of the field. Similarly, we believe that it is important to take our autonomous creative systems to collaborate with experts (not related to CC) in the real world, away from the laboratories and, if you allow us the metaphor, away from the "comfort zones" where they are usually tested. In this way, it is possible to assess their capacities. We refer to the process of taking a creative agent to collaborate with experts in the real world, in an environment that is different to the environment where the program is normally used, as Rich Creative Environment Experience (RICEE). This approach has three main features: to be able to manage the complexity of real-world situations is a great challenge to any creative system; to collaborate with experts provides a different perspective of the role of creative agents and it is a priceless source of knowledge; to work away from the familiar "comfort zones" provides a context that allows testing the foundations of our systems. We claim that RICEE can provide insights for CC that are hard to obtain in a different way. However, in order to be useful for the field, RICEE requires a methodology that allows testing and comparing different programs in a systematic way. Unfortunately, we are far from reaching that goal. The purpose of this paper is to motivate the CC community to collaborate in the development of a methodology to design and implement RICEEs. With this aim in mind, we share the work that we are currently developing and that was the origin of all these concerns.

Our current project explores how to represent in computer terms part of the knowledge employed by artists during the production of a piece in order to inform the generation process of a computer creative agent. Let us elaborate this idea. Artists employ sketches, storyboards, drafts of texts, and so on, to plan the development of a creative artifact. This material characterizes an important part of the artists' perspectives, expectations and beliefs about the piece in progress. We consider that, if we can represent in computer terms part of that experience, and we feed a creative agent with this information, then, the system will be able to generate outputs that the human artists will find interesting enough to be included as part of the piece in progress. Thus, rather than trying to build a system that collaborates in real time with humans, we are interested in developing an autonomous creative agent that works independently, but whose generative process is influenced by a representation of part of the knowledge that artists employ for realizing a particular creation (although this paper is about creative systems that were originally designed to work alone, we believe that the same or similar ideas can be applied to collaborative systems).

For this project, two multimedia artists and one scientist in computation creativity have gathered together. We employ MEXICA, a computer system that generates narratives, as the creative agent; and Stone of Madness, a

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multimedia installation, as the artistic work in process. The project is divided in the following steps:
1. The artists write drafts of the texts to be used in Stone of Madness.
2. These texts are adapted into a description that MEXICA can process.
3. MEXICA uses these descriptions to build its knowledge-base.
4. As a result, MEXICA generates new narratives that are shaped by the artists' representation of knowledge for Stone of Madness.
5. Some of MEXICA's narratives are selected by the artists to become part of Stone of Madness.

Step 1 is already finished. We are currently working in steps 2 and 3. We still need to develop and test steps 4 and 5. This paper describes the core features of Stone of Madness and MEXICA, describes the challenges we are facing at this time and finally reflects about the contributions of this work to develop a methodology for RICEE.

Stone of Madness

The title of the in-process art installation, *Stone of Madness*, is based on the medieval belief that a stone was inside the head of mentally ill people, causing their behaviors, and it required extraction through trepanation. The project is based on the artists' past work concerning the fragile nature of life and some personal history stemming from one of their pasts. Her parents had immigrated to the United States from Sicily and her father, a psychiatrist, worked with the criminally insane in state hospitals. She spent her childhood living on the grounds of state asylums, primarily Arizona State Hospital, located in Phoenix, Arizona, at a time when psychiatric medications were only beginning to be employed and when frontal lobotomies were still considered a viable treatment. There she mixed fairly freely with the patients and was exposed to quite varied perceptions of reality. Based on this personal history and the artists' focus on physical and psychological vulnerability they thought it would be an interesting project to use the narrative of this history, both in text and verbal forms, together with animations, to develop a multi-media installation. Their intention was for the work to explore some of the conflicts and connections between the distress and stigma of mental illness, the perception of it by its sufferers and those around them and the mental institutions themselves, all from the point of view of a little girl. As their thoughts developed about the installation, they began to feel a linear narrative could be too rigid for the project. In researching various systems to produce human-like text, however, they found those systems were not able to create the coherent sequences of narration they felt the project required. Because the process of artistic creation involves multiple dimensions, data alone cannot develop systems that explore in depth the relation between art and AI. Also, because of the psychological nature of the project, they wanted the narrative to be more ingenuous, as if the story was being told by a child. They were looking for a method where the bones of the story could be used as the basis for a system to develop its own novel narratives.

MEXICA

MEXICA is a computer model of the process of creative writing (Pérez y Pérez and Sharples 2001). The system represents knowledge in terms of emotional relations and conflicts between characters. This knowledge is registered in structures known as Contextual Structures. This is an example:

Contextual structure 1.
When the health of character A is at risk [this is a conflict], the narrative might continue as follows:
Character B arrives and cures Character A
Character B looks for help
Character A dies
Character B steals Character A's possessions

Character A and Character B are variables that can be substituted by any character in the tale. The first part of the Contextual Structure represents a specific situation in the story in terms of emotional relations and conflicts between actors, and the second part represents possible ways to progress the tale given that situation.

MEXICA builds its knowledge base from two text files provided by the user of the system, known as the Dictionary of Story-Actions and the Previous Stories. The Dictionary includes all the actions that characters can perform; the Previous Stories include a set of narratives, written by humans, following a rigid format, that the system employs to build the Contextual Structures. The number and features of the Contextual Structures depend on the content and length of the Previous Stories (for details see Pérez y Pérez 2007). When MEXICA is developing a new narrative, it looks for Contextual Structures that are equal or similar to the current story context to decide how to progress the tale. In this way, the Previous Stories strongly influence the kind of narratives that MEXICA generates (for an analysis of the influence of the Previous Stories in the outputs generated by the system see Pérez y Pérez 2015 and Guerrero and Pérez y Pérez 2020).

Extracting the Stone of Madness from MEXICA

The goal of this project is to employ some of the texts written for the piece Stone of Madness to build the set of Previous Stories that MEXICA employs. Then, we will ask the system to generate new narratives that, hopefully, will be interesting enough to become part of the final version of

the piece. In the following, we describe some of the challenges that MEXICA faces to contribute to the piece Stone of Madness.

Type of story-worlds. The narratives in Stone of Madness mainly take place in a psychiatric hospital in the USA; the characters are doctors and their families, nurses, patients, and so on. The narratives generated by MEXICA take place in a pre-Hispanic environment; the characters include tlatoanies, jaguar knights, princesses, and so on. Thus, it is necessary to modify the system to manage this new type of story-worlds.

Types of narratives. MEXICA generates plots where an actor faces an obstacle that has to be overcome, e.g., the jaguar knight has to rescue the princess. Thus, the narratives in MEXICA have an introduction, development of the conflict, a climax and a resolution. By contrast, the narratives in Stone of Madness describe ordinary situations in a mental hospital, told from the perspective of a little girl, that make the reader question the behavior and attitudes that doctors and nurses have towards the patients. These differences in the type of narratives present an important challenge for us. Because in MEXICA dramatic situations (e.g., wounded or kidnapped characters) are used to guide the unraveling of the tale, the features of the narratives in Stone of Madness require reconsideration in the generation process in MEXICA.

Representing the Previous Stories. The process of adapting the texts of Stone of Madness into descriptions that MEXICA can process has several challenges. This is an example of one of the texts written by the artists:

"My parents immigrated to the United States from Sicily with my brother, making a stop in Caracas where I was born to wait for entry into the USA. My mother was a housewife and my father was a physician specializing in psychiatry. After arriving in the US he began working in state hospitals for the mentally ill and the criminally insane. My family lived, and I grew up, on the grounds of various asylums, mingling with the patients and experiencing all kinds of different realities. We arrived in NY where my father found work at Pilgrim Hospital in Long Island but he wasn't fond of the east coast and so we headed west and eventually settled at Arizona State Hospital in Phoenix, AZ. We were given a small brick house on the hospital grounds where all the doctors lived. *There was a long chain link fence that separated the doctor's families from the patients living in the hospital and the children were allowed to play within this area.* My friends were not only other doctors' children, but also some of the patients who mingled around the fence. These patients weren't dangerous but some of them did things to themselves that most people would consider in bad taste. *I would watch and learn from the patients and they became friends*. *Unfortunately, my parents became aware of my relationship with the patients and, since they found the patient's actions inappropriate, told me that I shouldn't mingle with them. Since I considered them my friends, this was hard to do,* especially since I was having a hard time distinguishing how they differed from the supposed "normal" on my side of the fence. Needless to say, I continued to see my friends...."

Because MEXICA does not work with natural language processing, the system cannot handle this type of narrative. Thus, it is necessary to transform this text into a description that the system can manage.

The artists chose a small part of the original narrative (written in italics) and rewrote it as a sequence of events; each event includes only one action (which was included in the Dictionary of Story-Actions), some characters (mother, father, Lilla, patient) and, optionally, the name of the family. The following shows the result of this process (story-actions are represented by words separated by a hyphen):

Story 1
Scenery: Family House

Father and mother Were-the-parents of the Family LoCurto.
Lilla Was-the-daughter-of mother and both were members of the Family LoCurto.
Mother felt-uncomfortable with the patient.
Mother and Lilla walked-together-to-the-fence.
The patient also Went-to-the-fence.
Lilla mingled-with the patient.
As a result, mother strongly-disliked the patient.
Lilla and the patient became-friends.
Mother felt-upset-with Lilla.

MEXICA is able to read this description and to build its contextual-structures. We repeated the same process for the whole original text written by the artists. We ended up having several Previous Stores. We need to test if the knowledge-structures that the system builds from these stories are enough to produce narratives that satisfy the artists' requirements.

Knowledge structures. The narratives in Stone of Madness require representing emotional relations and conflicts between characters that are not contemplated in MEXICA. For instance, to make sense of the narrative just described, one needs, at least, to have a basic understanding of the concept of family as a social group, to know who the members of a family are and what their roles are. In this way, one can figure out that, because the mother feels that the patient is a threat to her daughter, she attempts to stop Lilla from mingling with the patients. Similarly, it is necessary to comprehend that in this social group, the mother has a higher hierarchy than the daughter. That is why she tries to impose a specific conduct on the girl.

In order to be able to employ this narrative as one of the Previous Stories, MEXICA needs to represent social groups like families, and to characterize emotional relations and conflicts that might emerge between members of the family. Based on an analysis of the preceding story, it is possible to determine some family conflicts. For instance, when one member of the family is fond of an outsider (a character that does not belong to the family) but other members of the same family with higher rank feel threatened by this outsider, a tension between the members of the family arises. The challenge here is to establish how these new knowledge-structures will be created and how they will be used during the generation of a new tale.

Discussion

This paper describes a project in progress where an automatic narrative generator contributes with some texts to the piece Stone of Madness. Our aim is to employ this experience to show an example of a RICEE. Hopefully, this example provides insights about how to develop a methodology for the design and implementation of RICEE. For this project, we have performed three basic steps. We reflect on them as a first phase to build the methodology:
(1) To establish the limitations of the creative system. Defining at least three categories that describe the limitations of the system would be useful for a methodology. For instance, limitations associated to the outputs, limitations associated to the knowledge-structures, and limitations associated to the generation process. In this way, it is possible to have a clear picture of the scope of the creative agent.
(2) Description of the RICEE. A methodology requires a description of the artistic project chosen for the design of the RICEE, and details about how the creative agent will collaborate in the piece. The purpose is to have a clear understanding of what the human artists expect from the agent.
(3) Defining the RICEE's challenges. As a result of contrasting the outcomes of steps (1) and (2), it is possible to identify the computational and creative challenges that the RICEE provides to the system. These challenges might be organized based on how complex their implementation is, or the kind of new abilities that they provide to the system.

The piece Stone of Madness was planned without having MEXICA in mind. Based on the three steps mentioned earlier, we conclude that the main targets of this project are:

- How to create a new story-world.
- How to develop a method to transform real story-world narrations into descriptions that MEXICA can handle.
- How to incorporate social structures, e.g., family groups, into the system.
- How to develop new knowledge structures that represent emotional relations and conflicts between the members of a family.
- How to handle new narrative structures during the creation of the knowledge-base.
- How to drive the generation process for novel narrative structures.

All these are new situations never contemplated in the original design of the system. We believe that, when this project is finished, the results will be useful to test the theories about creative writing behind the design of the MEXICA system. In this way, we will be able to create more elaborated narrative generators.

We are convinced that collaboration with artists and other experts can be useful for the advancement of CC if we are able to develop a methodology that allows for the systematic design and implementation of this type of environment. If members of the CC community share their own experiences working in projects similar to the one we have described here, we believe that we will be able to create a common mechanism to test and compare our systems. The goal of this paper is to motivate the CC community to collaborate in the creation of a methodology for the development of Rich Creative Environment Experience (RICEE). The reviewers of this paper have taken the first steps in that direction. They have pointed out the necessity of considering the following aspects:

- RICEE involves an assessment from experts. It is worth reviewing the work on expert and non-expert evaluation (e.g., Kaufman et al. 2008; Lamb et al. 2015)
- It is necessary to assess if it is possible to compare systems' limitations between diverse CC disciplines.
- RICEE will benefit from ethnographic interviews by a third party about the experience, treating the whole affair as a researcher-system-artist collaboration.
- 'One might call close cooperation with artists "ethology of the creative process," where computer scientists confronted with an ongoing process of creation of human agents will be better positioned to develop new and fresh ideas on how to improve autonomous systems' (anonymous ICCC'21 reviewer).

Thanks to the reviewers for these useful contributions. Hopefully, soon you will let us know yours.

References

Guerrero Román, I. & Pérez y Pérez, R. (2020). A methodology to forecast some attributes of an automatic storyteller's outputs. *Connection Science*, 32:1, pp. 81-111. DOI: 10.1080/09540091.2019.1609418.

Kaufman, J.C., Baer, J, Cole, J.C, Sexton, J.D. (2008). A

Comparison of Expert and Nonexpert Raters Using the Consensual Assessment Technique. *Creativity Research Journal*, 20(2), PP. 171–178.

Lamb, C., Brown, D.G., Clarke, C.L. (2015) Human Competence in Creativity Evaluation. in *Proceedings of the Sixth International Conference on Computational Creativity*, June 2015.

Pérez y Pérez, R. (2015). A Computer-based Model for Collaborative Narrative Generation. *Cognitive Systems Research*, 36-37, p. 30-48 (10.1016/j.cogsys.2015.06.002)

Pérez y Pérez, R. (2007). Employing Emotions to Drive Plot Generation in a Computer-Based Storyteller. *Cognitive Systems Research*. Vol. 8, number 2, pp. 89-109. (DOI information: 10.1016/j.cogsys.2006.10.001)

Pérez y Pérez, R., Ackerman, M. (2020). Towards a Methodology for Field Work in Computational Creativity. *New Generation Computing*, 38(4), pp. 713-737. DOI 10.1007/s00354-020-00105-z

Pérez y Pérez, R. & Sharples, M. (2001) MEXICA: a computer model of a cognitive account of creative writing. *Journal of Experimental and Theoretical Artificial Intelligence*. Volume 13, number 2, pp. 119-139. DOI: 10.1080/09528130118867