

Engaging Users in Writing Imaginary Conversations on Cultural Heritage Paintings

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Abstract

Edutainment approaches based on digital interfaces and tools are becoming an effective way for engaging the audience in enjoying Cultural Heritage (CH) assets. In this paper, we propose *Canvas Conversation Tales* (CCT), a web application for collaboratively writing conversation-based stories on CH paintings. As main functionalities, CCT allows users to compose their own conversations or continue someone else's stories about a given painting, with the ability to comment and vote on the imagined exchange of dialogue lines from others. CCT is online and available for testing. Ongoing and future work including evaluation activities are discussed in the paper.

Keywords

Crowd Writing, Edutainment, Gamification, Interfaces for e-Culture

1. Introduction

The use of digital interfaces is becoming an effective way for engaging users in enjoying Cultural Heritage (CH) assets. At the same time, the diffusion of edutainment approaches in CH is growing. The aim is to enhance the experience of tourists and visitors, by promoting models where the final user is not only the one who receives a message, but also the one who creatively interacts with the CH assets, so that personal feelings and feedback emerge, and can be returned and shared [1, 2, 3].

In this paper, we present *Canvas Conversation Tales* (CCT), a web application to create stories in the form of imaginary conversations, based on the visual content of a selected artwork, namely a CH painting. This creation process turns out to be an example of crowdsourcing, more specifically of *collaborative story writing*, a term we use to identify an activity carried out online, by a group of people not supposed to know each other, producing a narrative as output [4].

CCT has been employed to encourage citizens i) to share their viewpoints on selected artworks, and ii) to engage with experts around these artworks [5], which is a form of citizen science [6]. CCT is intended as an edutainment tool that can be adopted in a museum or exhibition area to engage both onsite and online visitors with a creative, collective activity. By providing a gamified experience of collaborative writing, we aim i) to improve the user engagement during the visit, either in person or virtual, ii) to foster people's connection with artworks and the messages they communicate. Through a conversation-based model, we aim to provide an attractive tool that could be especially effective for young audiences by offering them informal opportunities to communicate and learn.

2. Background

A multitude of approaches have been previously used to engage people with paintings. One longstanding research tradition is Wikström's "visual art dialogues", in which paintings are used to provoke structured conversations [2, 7]. This is commonly done involving trained facilitators who encourage reflections and discussions between participants and appreciation of aspects of the artwork itself. Another important recent trend is the increased interactivity in museums – including interaction with images – and the

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trade-offs between gamification and critical engagement that this development entails [1, 3]. A key takeaway is that active engagement should be designed with critical reflection as a goal.

An important part of edutainment is making interaction and content more game-like, i.e. employing gamification. Previous extensive research, starting from the search for empirical evidence for the existence of a classification of player types, has led to the identification of an interwoven set of motivations explaining why people play games [8]. Among these, important turn out to be i) *exploration*, as delving into the game world, ii) *personalisation*, as a way of finding ways to express oneself, and iii) *socialisation*, as engagement with peers inside the game.

When users are involved in writing a story from a painting, inspirations could be taken from collaborative writing [9]. In particular, two distinct approaches to collaborative conversation authorship can be considered: scene-based with one author responsible for an entire scene, and role-based where each user role-plays a character and the group collaboratively generates in-role conversations [4].

A further issue is what Colas and colleagues [10] describe as the “walled garden” problem, a tendency to create isolated contributions and a reluctance to participate, likely due to little knowledge of the context of previous contributions. Likelise, Andrè et al. [11] discuss the “territoriality phenomenon”, i.e. discomfort when modifying other people’s parts, lack of communication with other contributors, and limited global view. In their research, Dunn and Hedges [12] provide another recommendation by emphasising the importance of providing “social reward” to contributors in crowdsourcing activities. According to Hahn et al. [13], the *vote-then-edit paradigm* has proven to be successful in encouraging users to edit parts written by others. Finally, according to Lichten et al [6], the mechanism of positive feedback also provides the additional advantage of enhancing participant motivation.

3. The CCT web application

Canvas Conversation Tales aims to involve users into a conversational role-play, contextualised by the painting on which the story has to be developed. After selecting the painting to work on, users can use CCT to compose their own conversations (also referred to as *stories* in CCT) or continue someone else’s contribution, with the ability to comment and vote on the imagined exchange of dialogue lines from others (see Figure 1). A conversation is developed in CCT as a sequence of posts, namely *story units*, each one featuring an utterance of a painting character or narrator. The application is designed to be accessed by either remote, online users as well as in-person, onsite visitors standing at a public terminal within a museum or exhibition area.



Figure 1: A CCT screenshot where the user can contribute to a story. On the left, a summary of painting context and characters. On the right, the current conversation that the user can explore and edit.

Design choices. To provide an engaging experience, CCT aims to address issues pertaining to *exploration* of the artwork, *self-expression*, and *socialisation*. To encourage users to contribute, we provide

to provide context in the story development. Alternatively, when a user chooses to **contribute to an existing conversation**, each unit box is enriched with two icons for modifying or deleting the item from the story.

Any modification made to a unit leads to the creation of a new story, branched from the one chosen as a baseline. To encourage contribution, a Generative AI integration feature can be optionally enabled, capable of suggesting a possible next post in the conversation. The user is free to decide whether to accept, modify or reject the AI-generated suggestion. Beyond contributing to the contents of stories, a user can also interact with existing conversations by expressing engagement. One way to do this is to **give “likes”** to a story or individual posts. Another option to engage users is the possibility to **chat with other users** that are viewing the same story and are available to discuss on it. This chat system provides a “back-channel communication mechanism” among story creators. While its main use is intended for synchronous conversations among users that are simultaneously working on a story, it can be also used for asynchronous conversations that can be explored by future contributors. To have a clear and full visualization of the painting as well as to avoid information overload, the ancillary boxes (i.e., painting introduction and chat) can be toggled or dragged by the user.

4. Evaluation plan

One envisioned evaluation of CCT is a group task for users where each is assigned to a character (i.e., role-based story creation). The task aims to collaboratively create a plausible conversation-based story where each user contributes by providing the posts of the assigned character. A further evaluation task involves users individually, giving them a conversation for inspiration. In this task, a user is asked to compose an alternative story development to the one received (i.e., scene-based story creation).

According to the collected contributions from users, we will measure user engagement by the number of contributions to the stories, both in terms of direct posts creation, and indirect interaction via like votes, branches and chat messages. Beyond general statistics, also engagement funnel analysis could provide insights into the rate of retention along the steps of i) accessing a painting, ii) reading a story, iii) voting and discussing, and iv) contributing to it. In particular, the ratio of page interactions initiated by registered users with respect to the total number of page interactions may serve as an indicator of the propensity to active participation. Further analysis can be performed to determine how many of the registered users actually took part in story creation, contribution, or voting. Additionally, the degree of collaborative interaction among users may be evaluated by measuring the average number of authors per story, and the number of exchanged messages in chats.

To collect one-off usability feedback, we will perform post-session interviews. Moreover, to capture direct feedback from users about their experience, yet not overload them with uninteresting assessment activities, users are asked to provide optional feedback through the Net Promoter Score 10-point star scale [14] when they logout.

As a further issue of evaluation, we plan to measure the “believability” of the generated conversation-based stories using the Narrative Believability Scale (NBS-12) [15]. In this evaluation, we also plan to involve scholars that are experts of the paintings used in the tasks of story creation, so that the societal, historical context of the considered painting can be properly taken into account.

5. Concluding remarks

CCT is publicly available for free test at <https://cct.islab.di.unimi.it>¹. Current app developments are about effective story browsing when several dialogues are generated on a painting and one-by-one exploration of many conversation is challenging. Different strategies to sort stories are under consideration.

Moreover, we are currently working on a concrete edutainment scenario of CCT in cooperation with a museum. The idea is to include in CCT a selection of museum artworks to promote (i.e., one or

¹In current online version of CCT, AI-suggestions for story contributions are disabled.

two paintings). Museum visitors will be engaged in person during the visit with onsite installations of digital devices equipped with CCT. Being a web application, CCT will be also used to “remotely” engage visitors after their visit, when they are in the appropriate mood for a collaborative writing experience.

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