

Cardistry: Exploring a GPT Model Workflow as an Adapted Method of Gaminiscing

Brandon Lyman
College of Arts, Media and Design
Northeastern University
United States, Boston, MA

Ala Ebrahimi
College of Arts, Media and Design
Northeastern University
United States, Boston, MA

James Earl Cox III
College of Arts, Media and Design
Northeastern University
United States, Boston, MA

Szeyi Chan
Khoury College of Computer Science
Northeastern University
United States, Boston, MA

Christopher Barney
College of Arts, Media and Design
Northeastern University
United States, Boston, MA

Bob De Schutter
Khoury College of Computer Science
College of Arts, Media and Design
Northeastern University
United States, Boston, MA

ABSTRACT

Cardistry is an application that enables users to create their own playing cards for use in evocative storytelling games. It is driven by OpenAI's Generative Pre-trained Transformer (GPT) models that generate unique card titles, cards suits, imagery, and poetry based on the user's input. It allows the user to preserve their digital cards in an online repository and print them for tabletop game play use. *Cardistry* was designed to begin exploring the question of whether widely available GPT models could be used to adapt the process of gaminiscing to make it more accessible to designers and players alike. This short paper details the concept, design, and implementation of *Cardistry* as a first step in exploring this research question. It explains how the adapted gaminiscing process is different from the original process, discusses the limitations of the implementation, and expresses what future research would be required to answer the research question.

CCS CONCEPTS

• **Applied computing** → *Media arts*; **Media arts**; • **Human-centered computing** → **Collaborative interaction**; *Collaborative interaction*; • **Computing methodologies** → **Natural language generation**.

KEYWORDS

AI, generative AI, gaminiscing, GPT, playing cards, game design, card games

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1 INTRODUCTION

We present *Cardistry* as a prototype application that explores how generative artificial intelligence (AI) can be applied to the creation of gaminiscing games [4]. The generative AI model of interest is the Generative Pre-trained Transformer (GPT), which became widely

available to developers in late 2022 due to the public release of OpenAI's application programming interface (API) [10]. Gaminiscing games are a relatively new subgenre of non-fiction games that aim to connect people of different backgrounds and age groups by generating empathy through storytelling of authentic personal histories [1, 3].

Existing research on gaminiscing games prescribes a rigorous interview and analysis process [3]. The results of this inform a game designer of what to include in the game play experience they are creating to represent their subject's history. Creating games based on personal history with the existing methodology incurs a heavy time cost both to the developer and the subject. This cost could be prohibitive and could prevent these types of games from being created. The documented creative capabilities of GPT models could adapt the gaminiscing process so that a user may act as designer and subject of their own gaminiscing experience. This could make the process of gaminiscing more accessible to gamers and designers alike, which could also support the design philosophy's goal of connecting people.

Cardistry presents a way of utilizing generative AI to create a system that could allow a variety of users to participate in the gaminiscing process. It encourages users to enter a short, personal narrative about themselves. The application then uses a combination of GPT models provided by OpenAI to produce a digital playing card, complete with a title, suits, and an accompanying Haiku poem. The user can then print this card to an identification card printer, which results in a physical playing card ready to use in an evocative storytelling game play experience.

In this short paper, we review the use of GPT models in creative tasks related to games, as well as the concept and process of gaminiscing. We present *Cardistry* by reviewing its concept, design, and implementation. We discuss its limitations, and describe future uses of *Cardistry* that will aim to evaluate the following research question: Can widely available GPT models facilitate a gaminiscing experience?

2 RELATED WORK

2.1 GPT Models

Previous work suggests that GPT models are effective in helping human writers with creative writing tasks. A user study in the

field of human-computer interaction was conducted and found GPT models in this space are effective as idea generators, scene interpolators, and copy editors, but lacked content awareness and grammatical awareness [11]. Scene interpolation involves the user having ideas for events that transpire in a scene but no logical way to connect these events. When acting in this role, the user relies on the GPT model to “fill in the gaps,” [11, p.7] which could allow the user to focus on the more important details of the writing. Although this study is not directly related to games, the results of its qualitative analysis suggest GPT models could have the creative power to tell stories if guided by a human collaborator.

Another study more directly related to games evaluated the GPT-2 and GPT-3 models in the context of generating creative quest descriptions for role-playing video games (RPGs). Although the results of the study concluded that only one-in-five quest descriptions were deemed acceptable by RPG players, they note that those deemed unacceptable only contained minor issues [9]. This led the authors to conclude that the GPT model in their study “could be used as an assistant for co-creative quest writing” [9, p.10]. This study likewise supports the GPT model’s creative abilities when working alongside a human.

Lastly, a study was conducted to evaluate the GPT-2 model’s ability to generate non-player character (NPC) dialogue to describe a quest to the player [8]. The study compared NPC dialogue generated by the finely-tuned GPT-2 model to hand-written NPC dialogue by surveying 32 online participants. The study found that NPC dialogue generated by the GPT-2 model performed significantly worse in terms of language quality, coherence, and novelty. The study also found that the NPC dialogue generated by the GPT-2 model showed no significant difference compared to the hand-written dialogue in terms of surprise and creativity [8]. The results of this study serve as additional evidence of the creative strengths of GPT models in the context of storytelling in games, but again highlights the importance of human-AI co authorship to compensate for the drawbacks of the model.

These studies suggest that GPT models may be helpful in creative writing and storytelling. Moreover, a collaborative relationship between a human designer and a GPT model can potentially mitigate the model’s inconsistencies and drawbacks. GPT models are now widely available to developers and researchers due to OpenAI releasing an API for the underlying models of their flagship platform, ChatGPT, to the public in 2022 [10]. This availability coupled with the documented creative strengths of GPT models suggests they are reasonable candidates for facilitating gaminiscing experiences.

2.2 Gaminiscing

Gaminiscing is a term coined by Bob De Schutter who uses it to describe “reminiscing via a game,” and created the indie game *Brukel* using the process of gaminiscing. [4, p.17]. The concept is in its infancy in the literature as only three additional conference papers have investigated this concept. One such paper explores the practical application of gaminiscing to game design, and characterizes the process as “a design research method in which [an] interview subject influences the design of the game through their recorded memories” [3]. The paper details the game design process of *Catch the Butterfly*, which included multiple rounds of interviews,

transcribing those interviews, and conducting inductive thematic analysis to derive and inspire core game play elements. The game was designed to elicit empathy between player and the subject’s story, however, future research is required to determine if this effect was achieved [3]. The second research paper details a study that explores the effects of graphical fidelity on player experience using an adapted version of *Brukel* as a subject [1]. The author concludes that visual fidelity may not be necessary for a gaminiscing game to deliver its intended experience. The third and final research paper is a demo paper that describes the game *Catch the Butterfly* [2].

The purpose of gaminiscing in games is to deliver an experience that was lived by another person through game play. A deep understanding of a personal story is required to translate the lived experience to the context of play in a respectful manner. The process of gaminiscing requires rigorous interview and analysis processes to achieve this understanding [3]. This may present barriers to developers who want to make gaminiscing games.

3 CARDISTRY

3.1 Concept

Cardistry began as a twist on the concept of Tarot cards. Rather than predicting the future, it creates cards that retell past stories, and imbues meaning into the card instead of deriving meaning from it. *Cardistry* combines OpenAI’s modern AI platforms, DALL-E and ChatGPT in such a way that any user could create their own set of novel playing cards based on the stories they want to tell.

Cardistry explores an adapted method of gaminiscing that replaces the rigorous interview and analysis process with a single writing prompt that encourages the user to tell a story. The aim of this adaptation is to make the process faster and more accessible, while preserving the original gaminiscing goal of capturing an authentic story. The writing prompt reads as follows:

“Please share a short story that happened to you in the space below.”

Users can choose to memorialize a story from their personal history by generating a Tarot-inspired playing card whose name, artwork, and suit are created to represent the story. It should be noted, however, that the user can enter any story they desire, including fantastical or fictional stories. The user can then preserve the story both by printing a pocket-sized physical copy of the card and by saving the digital version to an online repository.

3.2 Design

The design goals of *Cardistry* are as follows: (1) Empower the user to create a personalized playing card about a story from their life through simple text input (User Empowerment); (2) Capture the unique meaning of the story with the card’s design (Capture Meaning); and (3) Present the user with ways of preserving and playing with their playing cards (Preserve and Play).

User Empowerment. *Cardistry* aims to make the process of playing card creation accessible. This is achieved through GPT model output, standardization of card layout and theming, and simplistic user interface design. The design leverages an ability of GPT models to distill concrete details from the personal recollections. This automates the process of converting a story told in the user’s own words to a prompt that is likely to generate an image representative of the story. OpenAI’s generative text-to-image GPT

model, DALL-E, is used to generate card art based on the input story. Beyond using generative AI to build the components of the card, we alleviate several difficult design decisions in the card making process. Cards created with *Cardistry* have a standardized layout including its title, suits, and reverse-side art.

Capture Meaning. *Cardistry*'s second design goal is to capture the unique meaning of each user story. Alongside the generative AI art intended to represent the user's story, we added two additional features with the goal of capturing and displaying the unique mix of emotion a user's story may entail. The first feature is a poem provided alongside the digital version of the card. OpenAI's large language models (LLMs) are prompted to re-imagine the user's story as a Haiku poem. The second feature is the suits system. *Cardistry* uses Open AI's LLMs to assign one or multiple suits to the card based on how the model interprets emotion conveyed in the user's story. *Cardistry*'s suit system was inspired by the suits of the traditional Tarot minor arcana: wands, swords, cups, and pentacles [7].

We wanted to design suits we felt would pertain to the stories being told by users of *Cardistry*. The process of designing these suits involved several hours reviewing stories from the Humans of New York website, a catalog of personal recollections from the inhabitants of New York City [6]. This website was chosen due to the vast amount of raw information on the human experience. We informally coded many of these stories based on the emotions they conveyed, and cultivated a subset of 12 stories they felt represented a broad range of emotion. We then entered the results of this informal content analysis into OpenAI's ChatGPT application, requesting that the algorithm distill key words describing the emotions that best represented the subset of stories. We iterated on this process until we were satisfied with a set of three contrasting pairs of emotions. We then asked the algorithm to assign an appropriate symbol to each of the six suits.

The resulting set of suits are (1) the Heart suit, or the suit of love, happiness, and all things that make one feel alive; (2) the Tear suit, or the suit of sadness, grief, and experiences that weigh heavy on the spirit; (3) the House suit, or the suit of identity, belonging, and finding one's place in the world; (4) the Tree suit, or the suit of growth, learning, and all things that help one become a better version of oneself; (5) the Crown suit, or the suit of power, wealth, and all things that help one feel like a boss; and (6) the Lightning suit, or the suit of freedom, rebellion, and all things that help one break free from the norm.

The four components (image, suit, title, and poem) of *Cardistry* cards are intended to be mutually reinforcing affordances pointing to the intended emotional experience the card represents. We believed this scaffolding to be necessary in order to help the viewer of a card to understand what the story that elicited the card meant to its creator. We believed that generating an image is not enough, for a casual viewer of the card, or even the creator. Instead, the layered components are intended to be mutually reinforcing affordances pointing to the intended emotional experience the card seeks to convey.

Preserve and Play. The final goal of *Cardistry*'s design is to preserve the user's story with a digital artifact and to provide the user with a physical playing card to use as a game piece. We believed that the users would be more likely to share and engage with the

playing cards if the cards were kept on their person, promoting the gaminiscing philosophy of sharing life experiences through play. We wanted the physical cards to be lightweight, high quality, and resistant to wear and tear as they are meant to be shared and played with. With the physical artifacts from *Cardistry*, users may begin to incorporate their custom playing cards into games that require cards with evocative imagery to play, such as *Dixit* [5].

3.3 Implementation

Cardistry is a playing card generator application implemented using the Unity game engine (editor version 2021.3.16f1), OpenAI's "gpt-3.5-turbo-instruct" LLM, and OpenAI's DALL-E 3 text-to-image generative model. For printing, the application employs a batch file to send the card's image to a Magicard 300 Dual Sided ID Card Printer for quick printing. *Cardistry* accepts a user's input and generates a playing card composed of artwork, a title, one or more suits, and a poem. All these components are generated by OpenAI's "gpt-3.5-turbo-instruct" model, one of the underlying LLMs of ChatGPT at the time of development. The artwork is generated by prompting the GPT model as follows:

"Create a prompt for DALL-E that will generate an image based on the following story. Provide only the prompt, with no punctuation: raw input from user."

Once the response to this prompt is received, the application prompts DALL-E with the raw result and stores the resulting image. Next, a title is generated using the following prompt:

"Provide a title with up to three words with no punctuation for the following story: raw input from user"

The suits are an attempt to represent the emotion the story conveys, which may help listeners to empathize with the storyteller. They are assigned using results of the following prompt:

"Here are 6 themes: [Love, Joy, Happiness], [Loss, Grief, Sadness], [Identity, Belonging, Home], [Growth, Wisdom, Progress], [Power, Wealth, Control], and [Freedom, Nature, Rebellion]. Please assign, on a scale of 1 to 10, how well the following story fits each of these themes. Do not provide reasoning, just the name of the theme and the rank. Make sure the ranks are in the order I provided above. Here is the story: raw input from the user."

The Haiku poem is intended to help capture the emotion the user's story may entail. The poem is generated using the following prompt:

"Write an obscure and evocative Haiku poem based on the following story. Provide exactly three lines: raw input from the user."

These elements are composed into a consistent playing card format, with the title and the suits overlaid upon the artwork generated by DALL-E. The format of the card was inspired by traditional Tarot cards. The time it takes to generate a card is variable based on internet connection and OpenAI's server traffic, however the process generally takes about 15 seconds.

Once the card is generated, the user can print a physical copy of the card with an identification card printer provided with the demo. The printing process takes approximately 30 seconds. The back of the printed cards display *Cardistry*'s branding, as well as a QR code that links to the *Cardistry* project page, where the holder can learn more about the project. The user has the option to read about the emotional card suits that have been assigned to their story.

4 DISCUSSION

Cardistry represents an adaptation of the gaminiscing process. Like the games described in [3] and [1], *Cardistry* aims to create an engaging experience by highlighting authentic personal histories. Unlike those games, the authentic personal histories are sourced from the user. This alleviates the design constraint in [3] and [1] that multiple interviews of the game's subject and thematic analysis are required to bring an authentic story to life through game play.

We designed *Cardistry* to answer the question of whether widely available GPT models are capable of facilitating a gaminiscing experience. The *Cardistry* application's development is the first step towards answering this research question.

4.1 Limitations

We use GPT models from OpenAI's API without any additional fine-tuning processes. We designed our prompts to elicit consistent responses from an otherwise unpredictable model. It is possible that the prompts could be more effective if we had chosen to fine-tune the GPT models in the application.

We chose to enforce a card style when prompting DALL-E for a card image to create consistency among the cards created by *Cardistry*. Allowing users to choose from a list of styles such as cartoon, abstract, artdeco, steampunk, or photorealistic would better support *Cardistry*'s design goal of User Empowerment.

Cardistry is currently dependent on an expensive piece of hardware to print out cards. To make *Cardistry* more accessible in its current state, a second card generation module that supports multi card printing through more inexpensive printers could have been implemented. The tradeoff would be that the cards would be of varying quality depending on the printer and paper used, but in return *Cardistry* would no longer be prohibitively expensive.

4.2 Future Work

Cardistry is an application that creates cards to be used in game play experiences, but is not a game itself. Before we can understand whether the GPT workflow in *Cardistry* could facilitate a gaminiscing experience, we first need to design a game that uses *Cardistry* as a foundation for its mechanics. Then, we need to conduct empirical studies to evaluate its ability to generate empathy among its players.

The common goal of the gaminiscing process and *Cardistry*'s adapted gaminiscing process is empathy generation between the player and the subject of the story being told. The results of the empirical studies mentioned above could be compared to the results of similar studies conducted on games that were created through the original gaminiscing process. This comparison would provide insight on whether the two processes are comparable in terms of empathy generation or if one is more effective than the other.

The playing cards that were generated during development inspired ideas for future projects that are not specific to games. For example, the cards could be used as a method of journaling one's life experiences in a playful manner. Furthermore, *Cardistry* in its current implementation could be used to gather and preserve end of life stories. Caretakers in a hospice setting could work with patients and their families to create a set of mementos aimed at enshrining and celebrating the life of the patient.

5 CONCLUSION

Cardistry is an application that explores an adapted version of the gaminiscing process in an effort to make sharing one's personal stories through game play more accessible. It leverages the documented creative strengths of GPT models to create playing cards based on user input. The goal is for those cards to be used in evocative story telling games. Thus, the user acts as the subject of their own gaminiscing experience. Future research is required to answer our research question of whether GPT models are able to facilitate a gaminiscing experience. These future research opportunities include evaluating *Cardistry*'s ability to generate empathy among its players and comparing this empathy generation to the results of similar studies on the original gaminiscing process.

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