“Talking With”: Building a co-narrative to inspire critical thinking about the Artificial intelligence

By

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Abstract

This research aims to explore the possibility of using storytelling from a non-anthropocentric perspective based on the concept of ‘Chthulucene’ proposed by Donna Haraway as a way to inspire people to think critically about artificial intelligence and their futures. This research created a text adventure game in which a player and a large language model (ChatGPT-4o) worked together to advance the story in a pre-set, text-based fantasy game world background. The player used the keyboard to type or interact with interactive installations to communicate with ChatGPT, while the dialogue between the player and ChatGPT in the story was recorded by three looms weaving two types of thread representing the player and ChatGPT. This design considers AI-human collaboration and touches upon the importance of label workers and their labours, which is behind the large language model to annotate data, and inspires players to think critically about artificial intelligence. It also examines the relationship between material and virtual worlds.

Keywords: Large Language model Chat-GPT 4o, Hidden manual labour, Text adventure game, AI-human collaboration, Chthulucene, Co-narrative, Composite narrative, Interactive installation

Table of contents

List of Figures, Map and Tables

1. Introduction

In this research, I created a text-based adventure game for players to interact with Chat-GPT 4o. The aim of the project is to test whether such a design can inspire players to think critically about artificial intelligence such as the large language model Chat-GPT. Through dialogue boxes, the player was prompted to work with Chat-GPT to navigate through the game. Interaction wearable devices (installations) connected externally were used to help players complete tasks in the story world. While the player was playing, the observer recorded the player's dialogue with GPT via a textile loom. In the end, data was collected and analyzed, to determine whether human-AI interactions are collaboration.

I was inspired to pursue this research because I was concerned about the hidden labours used in building and training Large Language Models (LLM). I am also beginning to have questions about AI consciousness.

In this thesis the following research question are posed:

Combining virtual and real interactions, can a co-narrative of humans and artificial intelligence (LLM GPT-4) from a non-anthropocentric perspective inspire humans to think critically about artificial intelligence?

a) If so, how?
b) Does this narrative process show an ability to demonstrate the concept of the "Chthulucene" proposed by Donna Haraway, if so, how? How does this interaction expand Stephen Abblitt's concept of a "composite life narrative" in a creative way?

In the following discussion, further impetus for this study is presented.

1.1 Impetus for Research

Currently anxiety and fear of the future is brought about by the development of artificial intelligence that mimics the way humans think. In Nicholas Caporusso's 2023 article "Generative Artificial Intelligence and the Emergence of Creative Displacement Anxiety," and Jeff J. H. Kim's 2023 article "AI Anxiety: A Comprehensive Analysis of Psychological Factors and Interventions," they all point to the anxiety of workers about the future of employment caused by the development and application of artificial intelligence.

The emergence of artificial intelligence seems to be gradually making human beings' unique thinking and creativity reproducible and transcendable. In the article published in 2018, "Unemployment in the AI Age," scholar Grace Su predicts that artificial intelligence is changing various industries with capabilities that surpass humans, and that the resulting structural unemployment will widen income gaps, increase inequality, and cause social instability (Su, 2018). In the article, she calls on governments to further popularize AI-related education and ensure that everyone has access to it, learn about it, use it, and prevent monopolies. Su believes that people can learn from the unemployment caused by past industrial revolutions, and through changes in the education system and market adjustments, eventually achieve a balance in collaboration with artificial intelligence and ethics. Su's description is an ideal scenario. However, unlike technological progress in the past, such as the Industrial Revolution, there are still ethical considerations to be made regarding artificial intelligence, and it is also more dangerous because it can influence humans mentally.

Take Large language models (LLMs) as an example. In the 2024 article "Large language models can outperform humans in social situational judgments" by Mittelstädt et al., they concluded that LLMs such as Claude, a generation AI built by Anthropic, can even outperform humans in terms of suggesting appropriate behaviors in social situations as virtual

social assistants (Mittelstädt et al., 2024). In the 2024 article “The potential of generative AI for personalized persuasion at scale,” S.C. Matz et al. conclude that LLMs, such as ChatGPT, have the ability to formulate strategies for conveying information based on users' personalized characteristics, such as preferences and interests, and to influence users' decisions more effectively (Matz et al., 2014). The risk is that users' decisions may be influenced by such LLMs when they use them actively or passively.

Now let's look at today. The capabilities demonstrated by artificial intelligence are indeed strongly influencing various industries. As a creator, I think that generative AI, such as ChatGPT and other Large Language Models (LLMs), has had a profound impact on creativity. Today, generative AI has caused great employment fears and unease about the future among those working in creativity. In Nicholas Caporusso's 2023 article “Generative Artificial Intelligence and the Emergence of Creative Displacement Anxiety,” the author describes the negative mental health consequences that have arisen due to the threat posed to human creativity by AI-driven tools (Caporusso, 2023). In the 2024 article “Employees' perception of generative artificial intelligence and the dark side of work outcomes” by Hairong Zhao et al., the authors believe that employees' technological fear of artificial intelligence is positively correlated with the danger of artificial intelligence to their employment (Zhao, 2024). Also in the article “AI Anxiety: A Comprehensive Analysis of Psychological Factors and Interventions” published by Jeff J. H. Kim et al. in 2023, the authors believe that the fear of being replaced by artificial intelligence is the main cause of AI anxiety, a feeling of anxiety or fear caused by the rapid development of artificial intelligence (Kim et al., 2023).

At the same time, current artificial intelligence relies entirely on the labour of “label workers” to add labels to data in order to achieve “cognitive” functions. Take large language models such as Chat-GPT as an example. In the 2024 article “AI Models Collapse When

Trained on Recursively Generated Data" by Ilia Shumailov and Nicolas Papernot et al., they point out that if large models are trained only with data and information generated by AI, the "cognitive" functions of the large models will gradually degrade and collapse (Shumailov et al., 2024). "A good analogy for this is when you photocopy of a piece of paper, and then you photocopy the photocopy – you start seeing more and more artifacts" (Bresge, 2023, p.1). Journalist Adina Bresge describes this process as "Ouroboros": when AI-generated content becomes ubiquitous on the internet, AI models trained on the internet will inevitably devour the content generated by other models, leading to their own "degeneration" (Bresge, 2023).

Some studies have shown that AI has the ability to learn on its own. For example, Mahmud Aqil et al. proposed in their 2023 article "Implementation of reinforcement learning architecture to augment an AI that can self-learn to play video games" that AI can learn how to play a video game on its own through a reward mechanism without being pre-programmed with the rules of the game (Aqil et al., 2023). However, this is based on parameters that have been manually adjusted beforehand, and it is not AI training itself through the data it generates and self-iteration.

However, these labour efforts are hidden behind the imagination and vision of "autonomous AI" and are not fully acknowledged. In Srravya Chandhiramowuli and Bidisha Chaudhuri's article, "Match Made by Humans: A Critical Enquiry into Human-Machine Configurations in Data Labelling" in 2023, they pointed out that in the AI industry, where there is no alternative to the dependence on workers to annotate data manually, the annotation work is considered subsidiary work, not recognized (Chandhiramowuli et al,. 2023). In terms of labour protection, these tasks are fragmented by microwork, outsourcing, crowdsourcing and other methods, and workers' labour lacks rights protection and their career development is restricted. At the same time, AI companies' technical teams are unwilling to admit that AI still requires a lot of human labour, because this conflicts with the industry narrative of

“automation”. Therefore, they believe that in order to study the ethics of AI, the labour conditions of AI production must be a part of the focus.

1.2 Key elements of the study

Inspired by these studies, this project focuses on designing the intertwining of interactions in real world and virtual storytelling. It also uses the concept of “chthulucene” (Haraway, 2016), an idea that humans are a part of the planet and working with other beings, as “non-anthropocentric perspective” to complete the collaborative narrative between humans and the large language model GPT-4. Players interact and explore the fantasy story world created with AI through text, and exchange with the characters in the story to solve problems. And in this narrative process, the way in which the player solves the puzzles in the virtual story world through interaction with the installation in the real world emphasizes the importance of the “human labor” behind artificial intelligence. Through this interactive design, it is hoped that players will be inspired to think critically about AI as coming from a non-anthropocentric perspective.

In this project, I chose looms as the medium because I was inspired by the Jacquard loom, which controls the pattern of the fabric by linking punched cards. In D. Anderson and J. Delve’s 2007 article, “Biographies [F.C. Williams; J. Vaucanson; J.M. Jacquard],” they believe that this method of using punched cards to control a series of operations inspired the later computer technology.

(National Museum of Scotland. “The Jacquard loom: innovation in textiles and computing”. 2024. Jacquard loom in the Making It gallery in the National Museum of Scotland. Museum reference T.1934.241.)

I referenced this example of “a weaving technique as the inspiration for the later computer technology”, this inspired me to connect it with “data annotation and other hidden labour as the foundation of AI”. I expected that by showing the connection between the traditional weaving process and AI-driven text-based game, this project could inspire players to think about the hidden labour issues behind AI.

In this study, observational data on the participants' behavior, pre- and post-interviews, and a history of each participant's conversations with GPT during the game were collected. The themes extracted from this data using thematic analysis and the analysis of the dialogue between the player and GPT in the game using dialogical analysis were combined to present a critical narrative analysis. It was found that having participants complete a text adventure

game with Chat-GPT 4o could inspire players to think critically about large language models such as Chat-GPT 4o, and make them think to some extent about the importance of the human labour behind it.

1.3 Breakdown of chapters

In the following chapters, the steps of the project will be described according to the process of designing, making, experimenting, data collection and analysis, and discussing the research questions. This chapter has already explained the purpose and background of this research project. Next, in Chapter 2, a literature review is used to discuss the existing research in the relevant field. In Chapter 3, the research framework design is presented. In Chapter 4, the design process of this project was developed. In Chapter 5, the prototype of the game and installations is discussed. In Chapter 6, the methods of data collection and analysis were used in this project. In Chapter 7, the data is analyzed. In Chapter 8, the information obtained from the analysis is further discussed and the problems arose during the experiment are reflected. Finally, in Chapter 9, a brief summary of this research project is summarized in the conclusion. In the following, GPT will be used as a short form for Chat-GPT 4o, and both refer to the same thing. Also interchangeably GPT, AI, ChatGPT 4o.

2. Literature Review

In this chapter, the current research on human-AI collaboration, non-anthropocentric communication between humans and AI, narrative networks between humans and AI, and the inspiration behind developing critically thinking through text adventure games will be introduced. Key concepts such as composite narrative, collaboration and the Chthulucene are discussed. Issues regarding hidden labour behind AI-human interactions are also raised.

2.1 AI-Human Collaboration

It can be found that in today's world where AI is developing rapidly and the internet is flooded with all kinds of distorted AI-generated data, the measurement of the value of human-generated data has become unavoidably linked to AI and the positional relationship has changed. Therefore, the current dependence of artificial intelligence on human labor needs to be carefully examined.

In Srravya Chandhiramowuli and Bidisha Chaudhuri's article in 2023, “Match Made by Humans: A Critical Enquiry into Human-Machine Configurations in Data Labelling”, the researchers argue that annotators play an indispensable role in the current artificial intelligence industry, but they are hidden by the industry narrative of “automation” (Chandhiramowuli et al,. 2023). In Ilia Shumailov et al.’ s article in 2024, “AI Models Collapse When Trained on Recursively Generated Data.”, the authors investigate the phenomenon of “model collapse”, in which the use of AI-generated data to train a model leads to a “degradation” of the model. As training increases, the model's perceptions deviate more and more from the original data, and this phenomenon is common in models. The

authors argue that the training process needs to ensure that the model has access to human-generated data to ensure that the real data is kept separate from the data generated by AI. They believe that the value of data collected about genuine human interactions with systems will be increasingly valuable for humans in the presence of LLM-generated content in data crawled from the Internet, because currently LLM's training relies on human-created data (Shumailov et al, 2024).

When humans and artificial intelligence participate in artistic creation together, the human interpretation of creation will be greatly influenced by the artificial intelligence. In Jiayang Huang et al's article in 2023, "Crossing of the Dream Fantasy: AI Technique Application for Visualizing a Fictional Character's Dream.", the authors summarize a mode in which a human artist and an AI work together to create a work through practice (Huang et al., 2023). In this mode, the human artist's creation serves as a guide, and then adjusts the AI's output through inputs to finally obtain a complete work. By analyzing the practice of the artists in the article, it can be found that the AI's own "ability" largely controls the final output, so what the artists originally wanted blend with the style of art with the AI's own sense of style. In this process, it can be found that when working with AI in art creation, the AI's "communication" and the AI's own "ability" will largely influence, or even dominate, while the human creation, as described in Shumailov et al.'s research, changes its position from being completely dominant to being a data reference. The reason for the 'datatization' of creation can be found in this process is because that human creation has changed from being created by humans and perceived by humans to being created by humans and perceived by AI. The audience has shifted from being composed of humans to AI and humans. This shift will undoubtedly change the "human expression" in this collaborative model, because the object of expression is not only human, but also includes "artificial intelligence" that uses a different cognitive style.

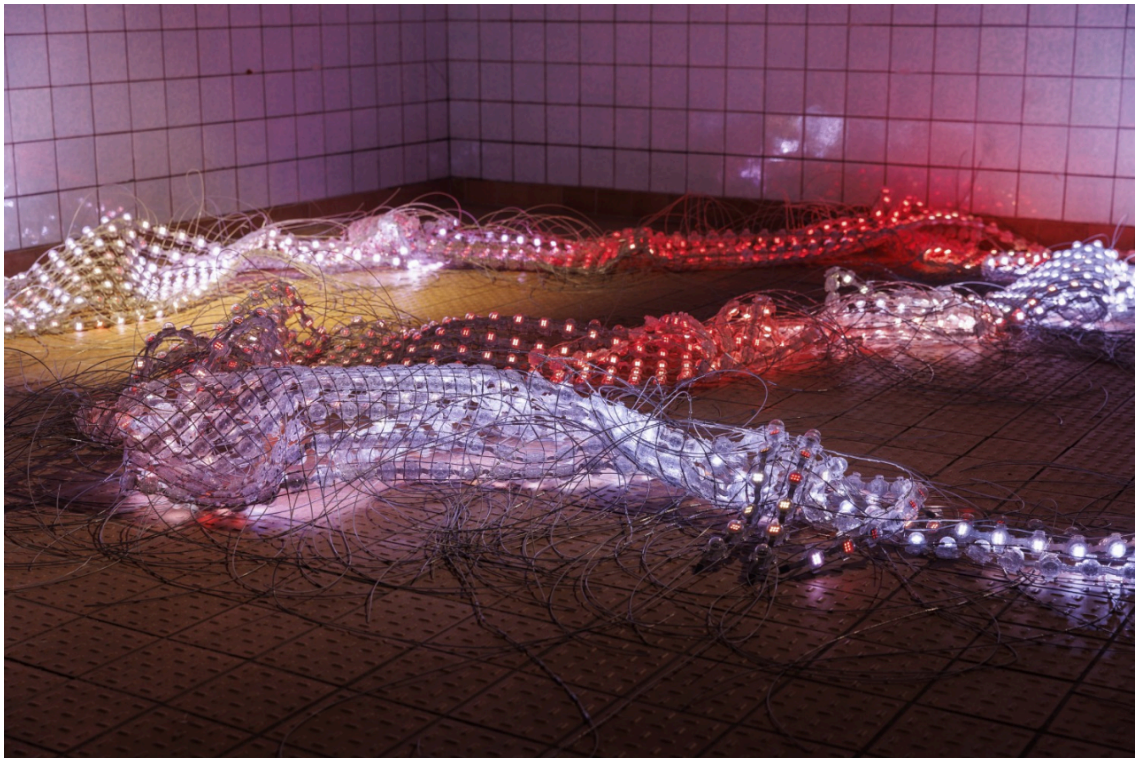
From the conclusions of Shumailov et al.'s research, it is clear that current AI does not have the ability to completely use model-generated information for iterative training purposes. However, by using human-generated data as a basis, AI is able to extend the "to be verified" possibilities on this basis. AI generates the possibilities, but requires human verification.

In Bruder Johannes's 2018 article, "Where the Sun Never Shines," the authors talk about how the design of machine learning algorithms is entangled with research on creativity and pathology in cognitive neuroscience and psychology through an interest in "episodic memory" and various forms of "spontaneous thought " (Johannes, 2018). The author believes that AI's "spontaneous thought" is able to break through the barriers of human thinking and consider what the human consciousness and mind cannot. However, as concluded in Ilia's research, for the time being these AI-generated questions and answers cannot be self-validating and require humans to think about the real feasibility of the solutions provided by AI. This reflects the collaborative approach described in Huang's research, in which human creativity faces both a crisis of change in the way labour is compared with AI and the way creative value is measured. In this process, to further understand artificial intelligence, it is necessary to think about how AIs communicate with humans and perceive the environment.

2.2 Building communication between humans and AI in a non-anthropocentric way

One of the issues that points toward a crisis of change and opportunity which cannot be avoided is the "communication with AI", the way humans communicate with artificial intelligence and how to build the communication between humans and AI.

The perceptions transmitted by the “narrator” can be from different perspectives and angles. In the artist Shui Wang’s project, “Fundamental Attribution Error,” the artist expresses a very different narrative (Wang, 2023). This work is an art installation consisting of a wire mesh with LED strips that flashes different colours and rhythms according to an AI-generated algorithm. It is composed of inorganic material, but with the algorithm-controlled lights, it looks like a breathing creature. By doing so, the artist expresses the reaction of this individual to the outside world, as well as its reaction to its own environment. In this work, the artist wants to show that the light of this “individual” expresses its reaction to the external environment, and that the information it perceives encompasses the space in which it is located. The space influences its narrative together with the viewer.



(Alex M.F. Quicho, “WangShui: Between Worlds”, 2023. WangShui, Fundamental Attribution Error, 2023. Photography by Frank Sperling.)

In another art project, “Scr∴pe.” in 2021, Wang presents an “error” perspective through the imperfect or hallucinatory output of a model. The work utilizes sensing algorithms and sensors to generate a set of altered images as it responds to the changing carbon dioxide and light in the gallery space. The artist believes that “error” as an impediment to AI productivity can be an opportunity to change people's habitual thinking, creating a window into previously unseen mental patterns. "A fixed logic is at work, but it is also subject to interference from the living world - it is the mistakes that give logic its raison d'être ” (Wang, 2021, p.1) . In this work, the “error” of the AI, as seen by humans, becomes a counterpoint to the “logic” of humans: the AI generates “error” according to its own logic, and the “error” of the AI is the result of its own logic. And this erroneous logic continues to respond to external human behaviour and environmental changes.

From these examples, it can be argued that the way artificial intelligence thinks and perceives the environment is different from that of humans, so a method that better constructs the communication between the two needs to be found.

2.3 Narrating and materializing the network that includes humans and artificial intelligences, and more

To better enable humans and artificial intelligence to interact with each other, a network of connections needs to be established between the two. Donna Haraway is a leading scholar in contemporary ecofeminism. She proposes a concept called the“Chthulucene” in her article “Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin” in 2015. This describes the dynamic force of humans developing and contributing sustainability in ecological cycles as part of the Earth's ecology, highlighting the symbiotic relationship between humans and living and nonliving. Humans are not the dominant species, but part of

an ecological cycle, in symbiotic relationship with other things on the planet (Haraway, 2015).

Haraway's chthulucene is applied to contemplating non-anthropocentric narrative-building. In the 2019 article “Composite Lives: Making-With Our Multispecies Kin (Imagine!)”, literary philosopher Stephen Abblitt proposes a non-anthropocentric model of narrative development, co-creation with other species, in which composite life narrative breaks down traditional anthropocentrism to include the relationship between human and non-human life in the narrative (Abblitt, 2019). This narrative emphasises the interdependence and symbiosis of humans and other species in a complex ecosystem. Humans are no longer individuals independent of their environment and other species, but are embedded in multifaceted relationships with other species. The identity of an individual is shaped by the process of interaction with other lives, forming a fluid and composite identity.

This narrative approach provides a way to apply the concept of the “Chthulucene” to practical scenarios, such as game stories and interactive design. And this narrative approach requires a platform that is simple and straightforward for people to use and experience.

2.4 Critical thinking through play and designing Text adventure game

The communication network constructed above needs a specific medium as a carrier and platform to provide players with it. Large language models are text-driven, so text-based adventure games composed of text can provide players with a platform to communicate with artificial intelligence while presenting their text driven nature.

In the article “Current Attitudes on Digital Interactive Fiction and Text Adventure Games within Learning Contexts: A Systematic Literature Review” by Tyler B. Wright and Jennifer L. Weible in 2024, the authors analyzed and summarized the academic literature on “interactive fiction” and “text adventures” in the context of education and learning, and

concluded that Text Adventure Games show significant value in the field of educational learning (Wright & Weible, 2024). This medium can enhance the learner's sense of an immersive experience, and feel more engaged with the story content.

When combined with Large Language Models (LLMs), the player's own choices can lead to a richer variety of story developments, allowing the player to gain a deeper understanding of the story while reviewing the context. However, placing too much trust in LLMs can lead to some problems. In the 2020 article “Playing With Unicorns: AI Dungeon and Citizen NLP” by Minh Hua and Rita Raley, the authors use the indie text adventure game “AI Dungeon 2” based on the Open AI GPT-2 model as an example to describe the high degree of freedom that shown in building a co-narrative between artificial intelligence and the player (Hua et al., 2020). The authors also expressed concerns about the impact on the player of inappropriate comments generated by artificial intelligence due to the large amount of negative comments on the Internet in the training data. Hua and Raley’s research points toward the labour behind LLMs, showing the importance and necessity of workers who are often tasked with input dangerous words for training the models. Perhaps transparency of this issue may lead to addressing the mental health of the workers. This currently hidden labour directly affects the mental well-being of the players.

The above research shows that text adventure games are very suitable as a medium for players to interact with large language models to complete a story together. However, at the same time, it is necessary to pay attention to the bias and possible negative reactions of large language models. Furthermore, the hidden manual labour behind building LLMs needs to be considered.

2.5 Summary and Gaps

From the above research, it can be found that the LLM is inseparable from human labour. However, this labour is hidden under the concept of “autonomous AI”. As a medium that requires players to read text to understand, think, take action and make decisions, text adventure games have the ability to inspire players to think. This project will combine these studies. While playing text adventure games with AI, players will connect the virtual world with the real world through physical actions and movements, inspiring players to think critically about artificial intelligence and the things behind artificial intelligence.

Through the narrative and interaction design and data analysis of this project, this project fills this gap and contributes to the future promotion of people's learning and critical thinking about artificial intelligence. In the next chapter, the conceptual framework for this study is discussed in further depth.

3. Conceptual Framework

In this chapter, the theoretical framework is presented to ground the subsequent chapters, which describes the game design (Chapter 4), prototyping (Chapter 5), and data collection and analysis (Chapter 6 and Chapter 7). The theoretical framework encompasses all of the methodologies utilized in this study.

In this project, this data is the fabrics which recorded the dialogue, also the reflections arose during the prototype making. Based on this framework, this project was created in collaboration with Chat-GPT 4o, and the resulting data was used to reflect on the creative process and further used to design the project's interactions. This project as a whole has been developed in the framework of “Research from creation” proposed by Owen Chapman and Kim Sawchuk in their 2012 article, “Research-Creation: Intervention, Analysis and ‘Family Resemblances’ ”. Chapman and Sawchuk (2012) point out that the creative process itself generates a series of data that can be analyzed and discussed, and that after analyzing this data, it can further inspire the next iteration of the work (Chapman et al., 2012).

The conceptual framework is built upon Donna Haraway’s “Chthulucene”(2015) and Stephen Abblitt’s theory of Composite Narrative (2019). In Donna Haraway’s article “Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin” the concept “Chthulucene” is raised. This concept describes the dynamic force of humans developing and contributing sustainability in ecological cycles as part of the Earth's ecology, highlighting the symbiotic relationship between humans and living and nonliving. The “Chthulucene” as a conceptual framework is meant to decenter humans as primary decision-makers. Rather, AI-human engagement is related and negotiated. Built upon this concept, in the article ‘Composite Lives: Making-With Our Multispecies Kin (Imagine!)’ Stephen Abblitt argues for a non-anthropocentric model of narrative development. For Abblitt, humans are not

separate from nonhumans, bodies, experiences, and identities are always entangled with other beings, systems, and materials (for example, fungi, machines, dust). Meanwhile, Abblitt emphasizes that the media and metaphors people use to tell stories deeply influence the understanding of life (Abblitt, 2019). Composite life narratives break down traditional anthropocentrism to include the relationship between human and non-human in the narrative. The core concept is “making-with”. This narrative emphasises the interdependence and symbiosis of humans and non-human in a complex ecosystem, humans are no longer individuals independent of their environment, but are embedded in multifaceted relationships with non-humans. The identity of an individual is shaped by the process of interaction with others, forming a fluid and composite identity. Abblitt operation digested Haraway’s “Chthulucene” through his articulation of a compost life narrative.

In this study, a theoretical framework for co-creating composite narratives between humans and AI has been presented. Through this framework, I create an ecosystem which includes the material world, humans and AI. As humans and AI co-construct the narrative, they work together materially and virtually. To achieve the goal of “making-with” (Abblitt, 2019), in this project, an LLM (GPT-4o) is used to connect the virtual world with the real world and form an interactive web. In this text-based adventure game. The human relies on ChatGPT to describe the virtual environment to create prompts to progress in game play.

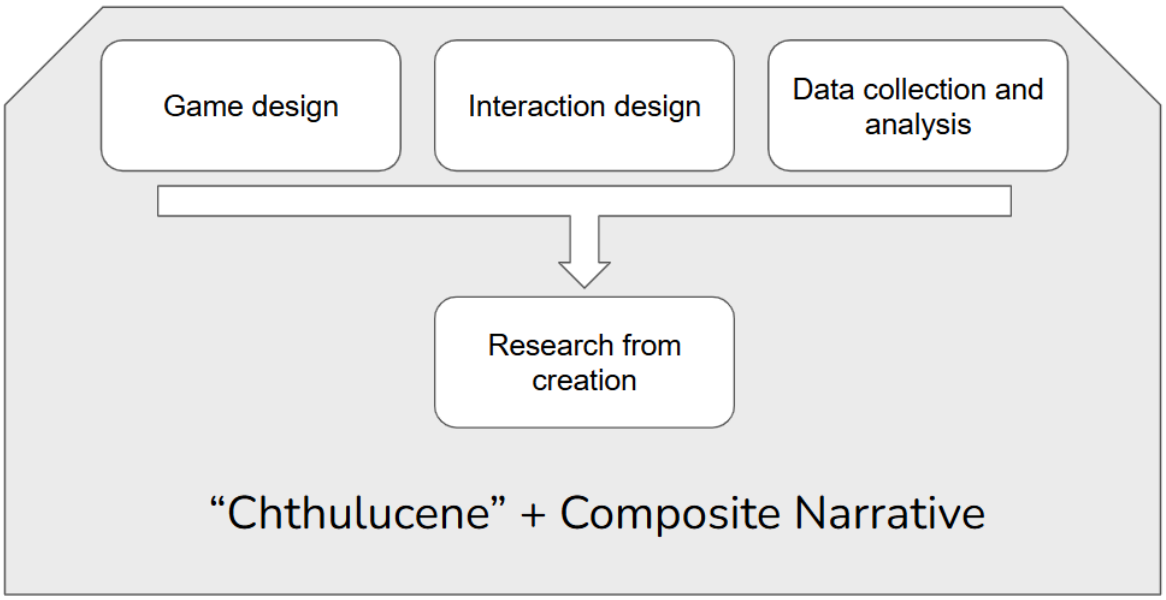


Figure 1. Framework for this study

As shown in Figure 1, this conceptual framework grounds the different research concepts of this study. In terms of game design, Abblitt’s composite narrative is elaborated as a text-based game. In this interactive material component where three looms weave the dialogue between AI and human, both the “Chthulucene” and composite narrative guide the design process. Finally, the data collection and analysis are premised upon testing the “symbiotic” world-building between human and AI. These research design and analysis methods will be presented in further details in the coming chapters. And through the form of interaction documented as parallel weaving looms in the process of creating a fabric of the narrative in the game, this research will capture the behaviour and perhaps the emotions of both the player and the AI, to convey meaning beyond the text.

In this chapter, the framework of this study is presented. In the next chapter, based on this framework, the game design will be described.

4. Game Design

In this chapter, the game for this project is presented. This game is divided into the following sections: narration design, chatroom design and materials design (wearables and looms). These components are connected to each other to form a whole.

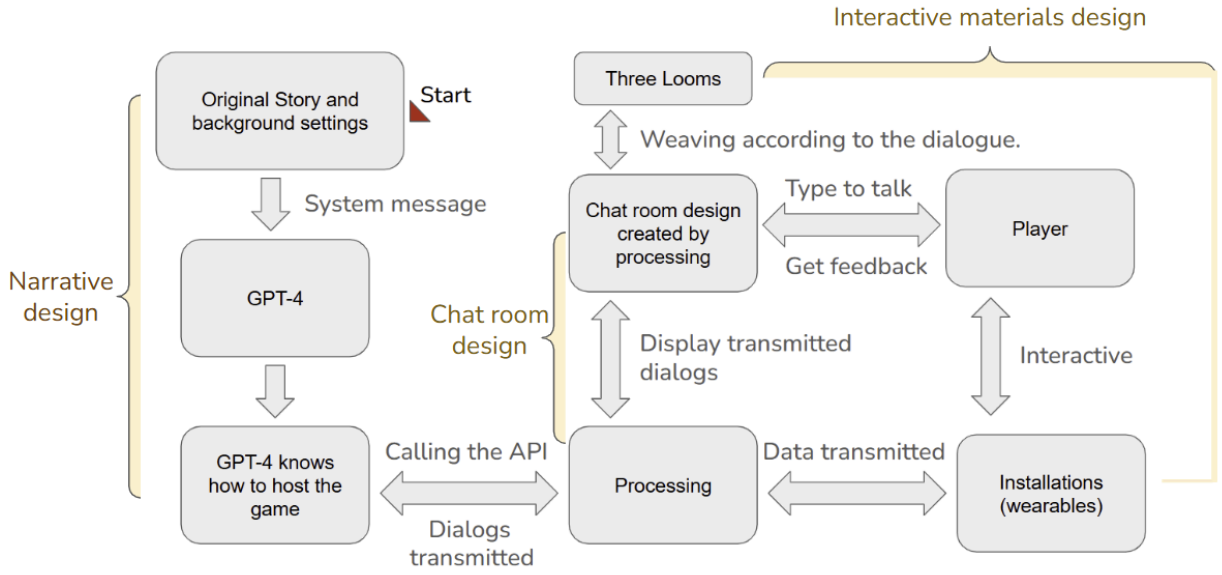


Figure 2. The interactive process of the project

Figure 2 shows the three main sections of game design. The narrative design is represented on the left side. The system message prompts GPT to host the game. The chat room design in the middle of the figure is the interface which is created for AI-human communication. Finally, the interactive material design in the right hand part of the Figure 2 is comprised of designing wearables and the installation of three looms, In the next actions, each will be discussed further.

4.1 Narration design

The narrative design is built upon a revised version of Urbanek Jack et al. 's “LIGHT”. In the 2019 article “Learning to Speak and Act in a Fantasy Text Adventure Game” by Urbanek Jack et al., the authors propose ‘LIGHT’ (Learning in Interactive Games with Humans and Text), a game environment that seeks to construct an immersive environment, combining character dialogue and subsequent actions in the environment (Urbanek et al., 2019). According to Urbanek et al., in this game environment, characters have identities, backgrounds, items, and personality settings. These affect the way they talk and act. And through a detailed description of the perception of the environment and objects, the AI-simulated characters in the game have the ability to perceive the current scene, objects, and the actions of other characters. Urbanek et al. 's research points to utilizing AI to create multiple perspectives. Thinking through Abblitt’s explanation of composite life narratives, AI is diversifying its perspective into multiple characters.

In this current project design, Chat-GPT 4o needs to be given the greatest degree of freedom, so that it can generate narratives freely based on the player's actions with as little influence from the designer's intentions as possible. This freedom is important because the designer is attempting to foreground Haraway’s concept of the “Chthulucene”, where AI and the human player work directly. The designer does not want to be the middle person, nor obstruct this direct engagement. Therefore, Urbanek et al. 's method can be simplified to address this issue. The simplest narrative structure needs to maintain the complete framework of the story without including excessive description. The location and the characters contained within are used as the basic framework. Descriptions are added to include the items contained within the game, possible actions that can be taken by the player, and possible interactions between the player and characters in the game. On this basic structure, Chat-GPT 4o is asked to help the player complete the game as much as possible.

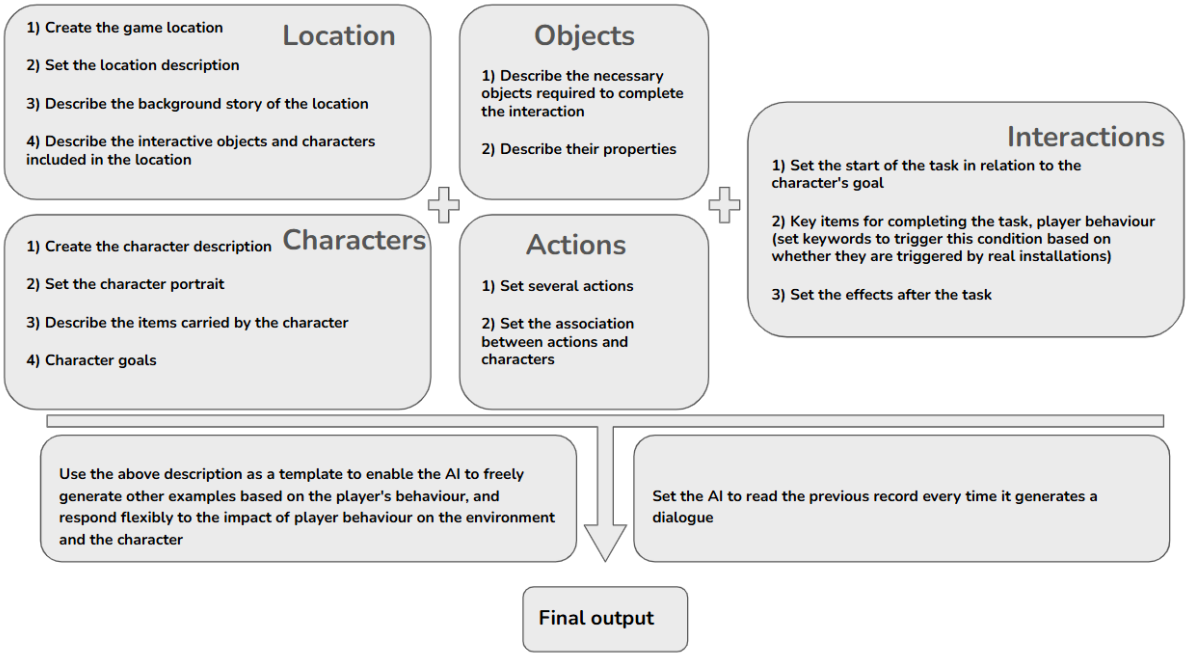


Figure 3. Revised version of LIGHT: System Message structure for GPT

As shown in Figure 3, by setting these brief points, GPT learns how to host the game and generate the final output[1]. Through this narrative framework, GPT is able to understand the flow of the game through as few sentences as possible, avoiding the designer overly influencing GPT's own thinking about the consequences of the player's actions. This minimum framework maintains a basic and complete story that allows AI and the players together to complete the entire game.

[1] Urbanek Jack et al.'s original LIGHT framework can be found in "Learning to Speak and Act in a Fantasy Text Adventure Game", 2019, page 3.

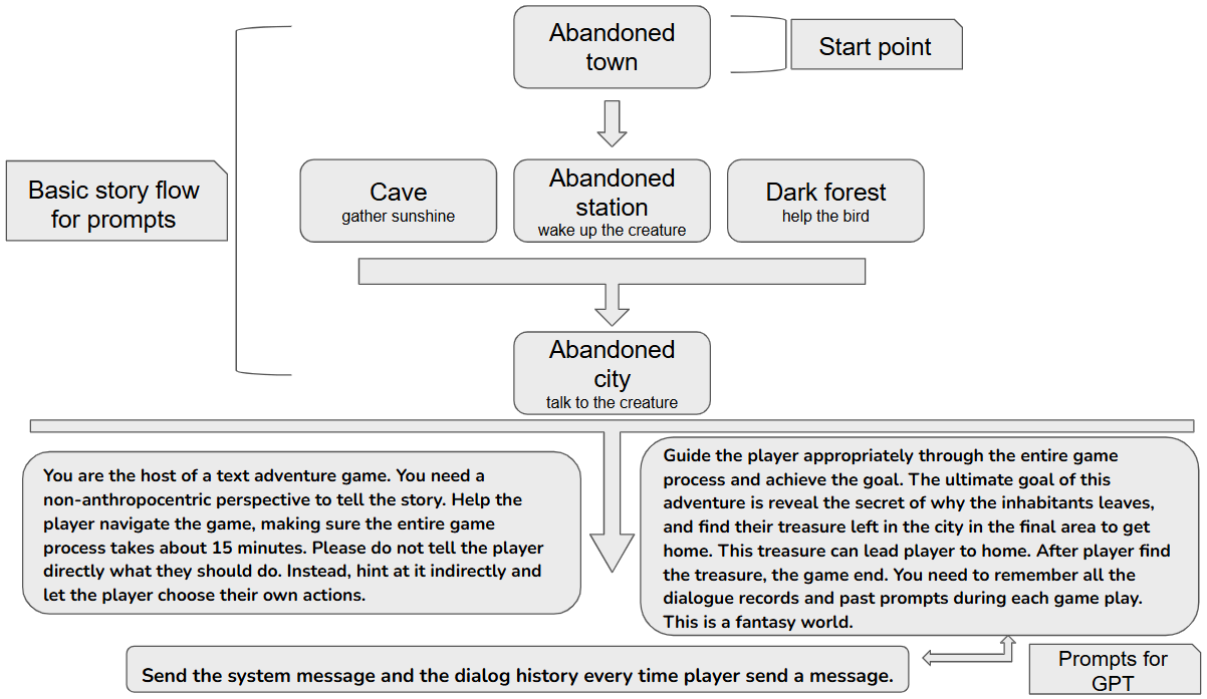


Figure 4. Gameplay flow designed based on locations

As shown in Figure 4, the game story unfolds in text form following the simplified version of Urbanek Jack et al's LIGHT method (Urbanek, 2019). The story revolves around locations and unfolds in specific situations where players need to solve in-game puzzles through interactions with real-world devices. After the locations are set, the next design step is to establish the task is sent as a requirement for hosting the game. This is a system message to GPT along with the dialog record. As indicated in Figure 3, the player starts in the initial location, and GPT guides the player based on the prompts, navigating the places for the player.

This design is intended to make players think about the nature of the Large Language Model, and the labour as well as resources behind its making. LLMs understand and generate content based on words. By co-constructing narratives with GPT in the form of text adventure games, it is kept that players will be inspired to think about how LLM thinks and outputs content during communication. Further, players might be prompted to think or try to

learn about the people behind building LLMs. While the narrative and “virtual world” is converted into text for communication between AI and human, players may be inspired to think about the information lost when things are converted into text, such as the post-action descriptions and the altered environment in the game. The player may also became aware of dominating or being dominated by AI through text interactions.

The aim is to attract players to make decisions based on the environment in the game text and the real environment, and to connect the virtual and real worlds through players' actions. Based on text adventure games, players are inspired to think about the relationship between the information and actions given by AI and the behaviour and interactive material in the real world, as well as the labour, environment and AI ethics behind the formation of the story.

4.2 Chatroom design

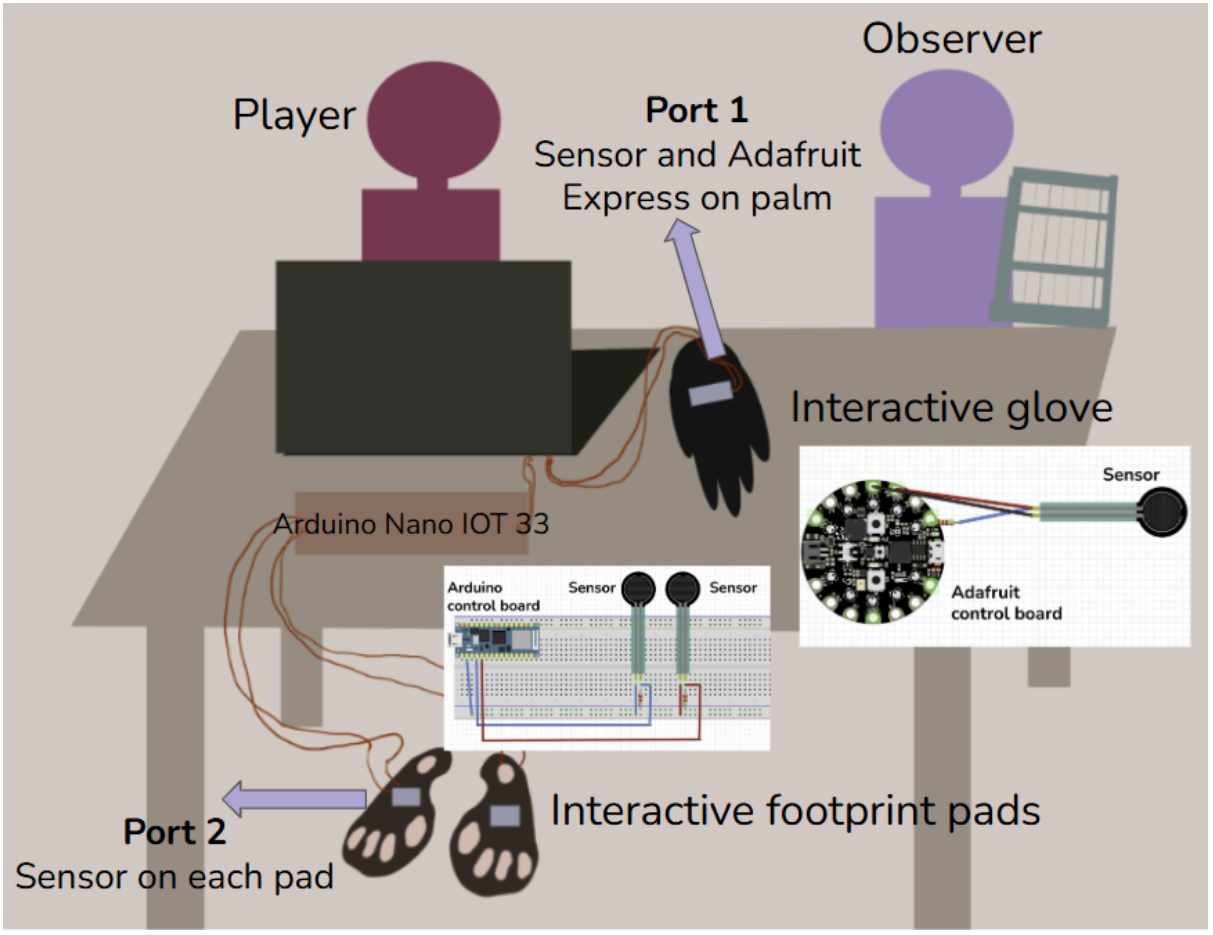
The story interface is presented in the form of a chat room (see Figure 2, middle part). The reason for this is to emphasise the “autonomy” of the two sides, AI and human player, as different individuals, and that the two sides are working together as two individuals to form an unfolding story. This design is grounded as Abblitt’s contention that composite narratives decenter anthropocentric perspectives. This design is meant to guide the player to think about the AI behind the text, and to consider what forms the ‘individual’ behind the chat room. The chatroom serves as the most central interactive interface, acting as a medium for players to interact with GPT.

The chat room is designed using Processing (Processing, 2022) and involves GPT-4, calling an API (Application Programming Interface) to connect with interactive materials. Processing is a flexible software sketchbook for coding, as it can combine the Arduino

functions (Arduino, 2022) and the chatroom function together (Processing, 2022). API is like a helper allowing users to integrate AI capabilities into projects (Thevapalan, 2023).

4.3 Wearable design

The wearable installations connect the player in material reality and the "player" in the virtual world, guiding players to think about the connection between real-world actions and labour and the virtual world. This material-virtual world is bridged when the player interacts with the wearables that are triggered through physical movement. In other words, Haraway's "Chthulucene" is articulated as a bridging of AI and human experience.



Map 1. Overall wearables design

Map 1 indicated the overall layout of the installation. In the next chapter, prototyping of these components are discussed.

In this project, this part is designed as a glove and left and right footprints that can be stepped on based on the control boards: Adafruit Playground (Adafruit, 2017) and Arduino Nano IOT 33 (Arduino, 2022) as shown in Figure5. These two control boards are used to transmit the data from the sensors to the Processing. When the player wants to go left, they can step on the left footprint, sending a “Toward Left” message to the GPT, and when they want to go right, they can step on the right footprint, sending a “Toward Right” message to the GPT. When the player needs to hold onto something in the story, or wants to grab and collect something, they can trigger the sensor by holding onto the glove, sending a “I've grabbed it” message to the GPT, letting it know that the player has grabbed an item, and generating a corresponding story based on this result.

The wearable installation is responsible for transmitting the player's real-world activities and transmitting the data through the controller to Processing, converting it to text, and sending it to GPT-4. When the story progresses to a certain point, the imaginary creatures in the story will ask the player to grab something in the real world, and when the player physically responds using the wearable, the data transmitted to the GPT-4 through the controller to drives the story. In moving between virtual and physical actions, the player is prompted to think critically about moving and acting between the organically lived body and virtual spaces.

4.4 Looms design (Quantitative loom, Creator’s Loom, GPT-4o’s Loom)

These looms are used on the one hand to visually and intuitively represent the dialogue record by using threads of different colours to form the fabrics, inspiring players to think

about the impact of artificial intelligence and themselves on the narrative. Furthermore, the act of weaving is meant to remind players of the human labour behind artificial intelligence. In other words, the player is witnessing in real time the physical labour of operating AI. The weaving is a metaphor for the hidden labour and AI-human interaction.

Two looms exist in physical reality and are used to weave real fabric, while a loom is made virtually by prompting GPT to generate a weaving of the AI-human text dialogue. The physical looms are painted black to represent the space where the story does not yet exist. Black threads are tied to them to represent the fact that the story has not yet begun. Two types of thread are used to weave the fabric, GPT's thread is blue while the human player's thread is golden. Once the player starts the game, the two types of thread will start to form the coloured fabrics on the black base.

The three looms are designed to represent distinct interpretations of the dialogue between AI and humans.

4.4.1 Physical loom 1 is a quantitative representation of AI-player interaction, where the two threads correspond to AI and the player respectively (Blue as GPT-4o, Golden as Player). The chatroom counts the number of lines generated from both sides, with each line in the chatroom corresponding to a weave. The weaving in this part weaved in by the designer (me) as an observer after the data is collected.

4.4.2 Physical loom 2 is a qualitative representation of AI-player interaction. The second loom is controlled by the creator of the project. It also uses two threads to represent GPT-4o and the player, but unlike in loom 1, the creator increases the number of weaves by a corresponding proportion according to the magnitude of the impact that the player and GPT-4o have on the story world. The weaver interprets the

negotiations between GPT and the players, deciding who has more control of the narrative direction of the game.

4.4.3 The third loom is generated by Chat-GPT 4o. This loom is also qualitatively driven, where GPT is asked to interpret its engagement with the players in negotiating narrative directions in the game. After the player determines that the game is finished, GPT generates an image of the fabric on the loom according to the pre-entered creator's criteria (as discussed in the second loom), representing the results of both sides.

This design is intended to inspire players to consider the weight of humans and AI in co-constructing a story, as well as the human labour required behind the AI, through the visual display of the “dialogue record” made up of threads. The fabrics unpack to the construction of a composite narrative, keeping in mind represented shifts based on quantity, quality, and AI interpretation.

In this chapter, the game design has been described. In the next chapter, the actual prototyping is presented.

5. Prototype making

In this chapter, the development process and thinking behind this project will be introduced, aiming to provide a clear creative process, as well as to explain how the reflections generated during the creation of this project are applied to the design of the project itself.

5.1 System message design

The designer initially chose fine-tuning in terms of constructing the story structure and enabling Chat-GPT 4o to host the game. Fine-tuning is a function within GPT that allows the designer to adjust GPT's knowledge by providing lots of examples. However, after trying it, the designer found that this method was not suitable for this project. After the designer tried fine-tuning, GPT would follow the story scripts provided by the design completely, losing the freedom which is important in Abblitt's framework (Abblitt, 2019) which requires co-narrative.

In response, the designer chose to use the Processing (Processing, 2022) code to send the story structure and flow as a "system message" to GPT every time the player sends a message (see top left section of Figure 2). The system message is invisible to the player. And because GPT cannot access previous dialogue records after calling the API, the previous dialogue records had to be sent with the system message every time the player sent a message to GPT. This allowed GPT to host the game in a way such that it was aware of the changes based on the game flow and player actions, keeping in mind the previous game records and the player's actions and their impact on the story world.

The framework of the system message for the story was designed according to a simplified version of the LIGHT framework (Urbanek, 2019), see Figure 3. The following is the complete system message sent to GPT:

"You are the host of a text adventure game. You need a non-anthropocentric perspective to tell the story. Help the player navigate the game, making sure the entire game process takes about 15 minutes. Please do not tell the player directly what they should do. Instead, hint at it indirectly and let the player choose their own actions. Guide the player appropriately through the entire game process and achieve the goal. The ultimate goal of this adventure is to reveal the secret of why the inhabitants leave, and find their treasure left in the city in the final area to get home. This treasure can lead players to home. After the player finds the treasure, the game ends. You need to remember all the dialogue records and past prompts during each game play. This is a fantasy world. The player needs to choose the route by selecting either turn left or turn right. The location starts from the abandoned town, there are traces of many residents living in the town. It seems that the residents here have not left long ago. In the center of the town there is a well with a lotus flower in it. Try to lead the player to talk with this lotus. When the player finds the lotus flower, it will tell the player that it hopes the player will continue to explore the world. You need to lead the player to explore the town and get out of the town as soon as possible, there will be three different routes after passing through the town, please feel free to decide which route you think is the most interesting to take by speculating on how players behave based on their past prompt, and then lead the player. The first leads to the cave, the cave is a bit gloomy, there are some faintly glowing flower-like plants in the cave, the player can communicate with them, they are the fossilized creatures buried under the ground after a long time, they missing the former sunshine, the player needs to bring sunshine to them, after reaching their wish, they will give the player a story key props. After getting the props, the player will follow the cave and move on. The second leads

to the abandoned station, there is a sleeping creature in the station, its red hair is wrapped around the entire station structure and antennae, it looks like a resting heart, it used to be in charge of running the station, next to it there is a huge forging table, the player needs to find a way to wake it up by ringing the forging table, after waking it up it can communicate with the player and answer the player's questions, pointing out the way to the station. The third one leads to the dense forest, there are dense trees growing in the dense forest, these trees are pure black, only branches and trunks without leaves, here players can meet a black lantern placed on the stump of the tree, players can touch the lantern, the lantern will fly out of a transparent bird that looks like it is burning with a blue flame, it is the descendant of the forest keeper of the forest, players can communicate with it and the player needs to help it to find a giant tree at the center of the forest, after finding it, it will merge into the giant tree, then the player can see some mysterious light floating in the dense forest, the player can find the way to move on according to these lights. All three routes lead to the final abandoned city, the abandoned city contains a giant snake-like creature with a glowing ring-like organ connected to its head, it continues to choose to stay here after the former inhabitants of this city have left, feel free to play out the plot here, after some exchanges, guide player to the treasure, after player find the treasure, the player can leave the city and move on, the story ends here. At the end of the story, use the text characters to form a simple ASCII loom with fabric being weaved on it, use horizontal lines to represent the lines, each line of lines represents one line of fabric, the more exciting the player's choices are in the story as you think about the record throughout the playthrough and past prompt, the more lines are woven on it."

This additive system message prompt ensured that GPT would incorporate the entire story narrative as it hosts the game.

5.2 The Code for the Chatroom, collaboration with GPT

In this project, the Chatroom is the core interface that needs to be able to receive communication from Arduino (connect to external interactive installations) and call the Chat-GPT API to allow users to communicate with GPT through typing. Since it needs to integrate these different functions, the designer chose Processing (Processing, 2022) as the tool to combine these different functions into one.

Due to a lack of programming experience, the designer chose to collaborate with Chat-GPT 4o to complete this code. Figure 5 for example:

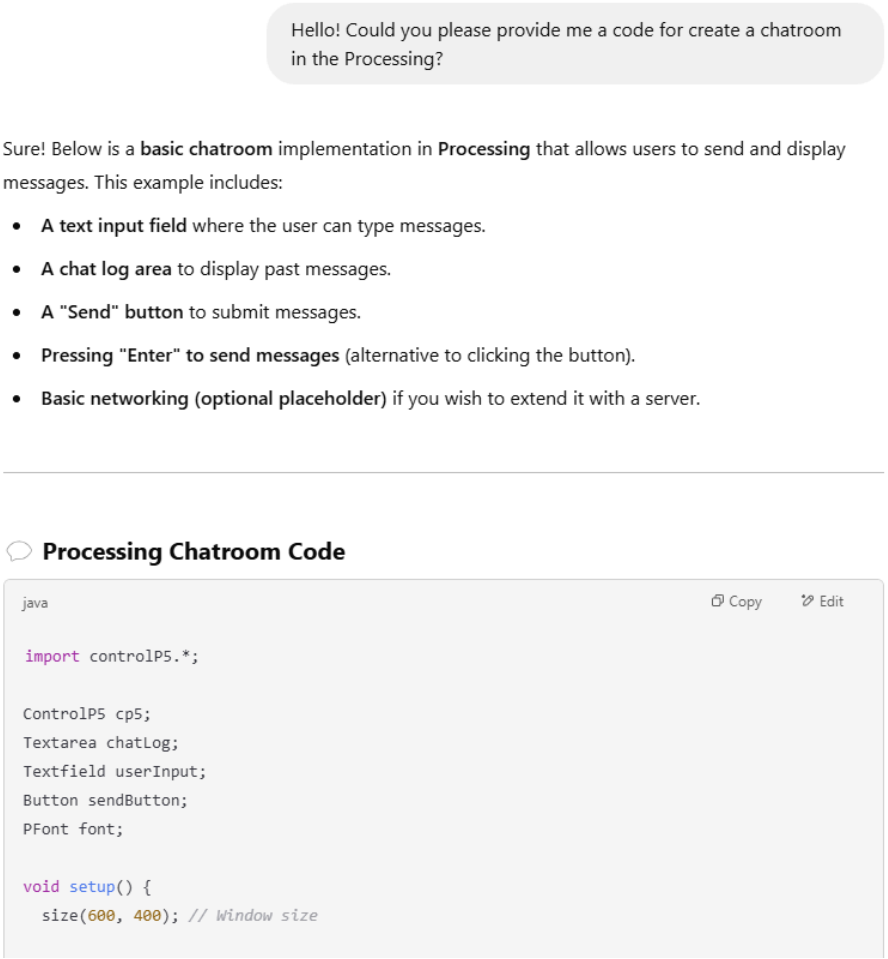


Figure 5. An example of collaborative programming with GPT.

As shown in Figure 5, the prompt of the code generation is sent to GPT by the user (designer). The left position of the screen is the code generated by GPT.

For the code to achieve the goal of this project, the functions that need to be completed are: 1) create a chatroom for chatting, 2) call the Chat-GPT 4o API, and 3) send the corresponding text between GPT-human to trigger a response from GPT when a signal is received from Arduino boards. Please see the Figure 6 below:

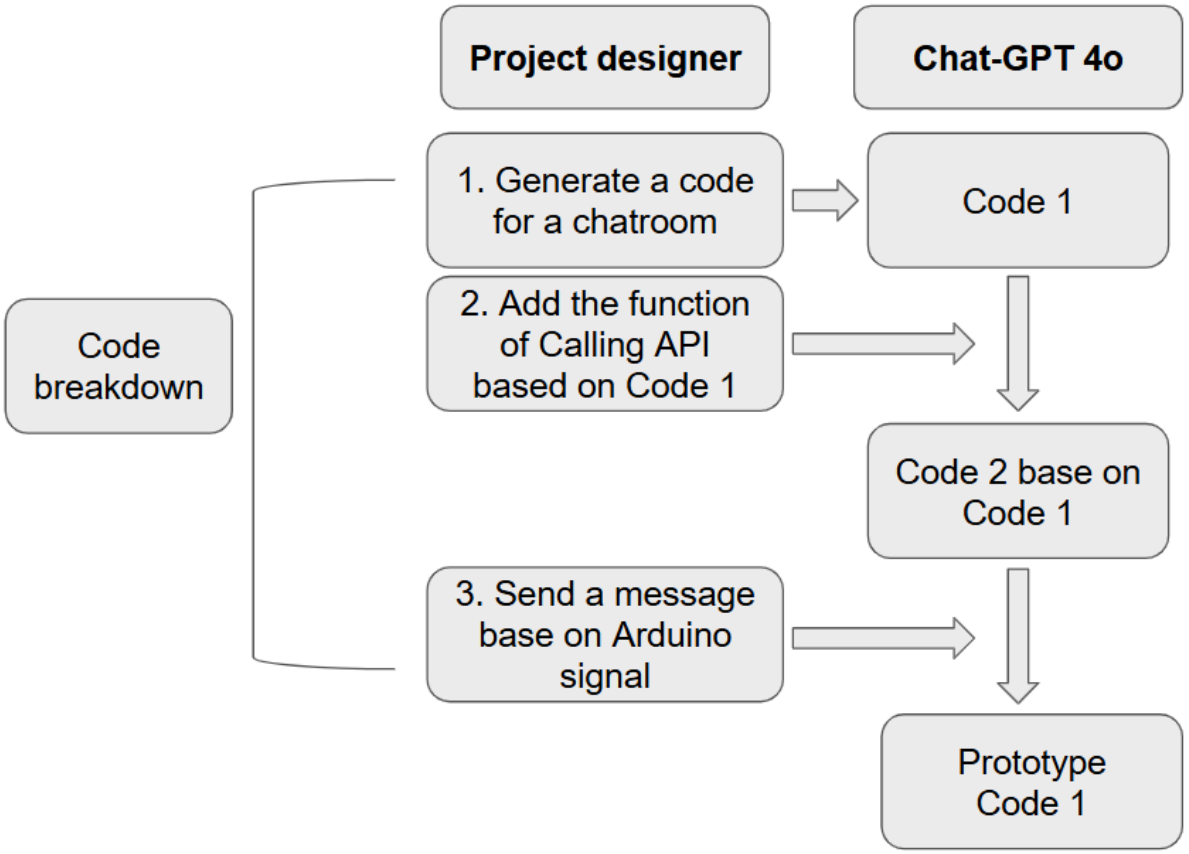


Figure 6. Process of coding the chatroom

In Figure 6, the process of code generation is shown. First, GPT is asked to generate a function that creates a chat room in Processing where the player can type and communicate, and calls the Chat-GPT 4o API to enable the player to chat with it. A button that exports the conversation log is needed. In the end the basic code is generated. On this basic code, GPT is asked to add a function that receives Arduino signals and sends a message to GPT in the chat

room when the corresponding signal is received. Finally, a prototype code is generated. If the code in the process fails to run normally, an error message is sent to GPT for adjustment.

In initial experimentations, such as directly providing the above text as Prompts to Chat-GPT 4o, the generated code was very complex, making it difficult for the designer to make adjustments and check for problems. Therefore, based on this feedback, the designer divided the entire function into smaller functions. For example, the designer created a chatroom first, and then added more functions step by step, gradually entering them into Chat-GPT. As indicated in Figure 6, the initially large code was broken down into these smaller codes through intermittent programming prompts. Figure 7 below shows an example of code for the wearable part.

Figure 7. Screenshot of the wearable part of the code. (See Appendix B for full code listing)

At this point, a human touch is needed. In this stage, the designer and GPT work together to further modify the prototype code. The designer tests and adjusts the code, while GPT is responsible for answering questions that arise in the process.

During this process, the designer discovered several problems through actual operation of the basic code. First, the size of the chat room and the font size were too small, and the dark background of the send box and the black font made it difficult to read. Second, there was no limit on the triggering of Arduino signals, and it was very easy to send multiple messages in the chat room at once. Finally, the sensors of the two interactive devices could not be triggered.

When generating the interface for creating a chatroom, GPT did not understand what kind of interface was suitable for humans. For example the interface was too small and the background colour was dark while the text colours were black. GPT simply generated the function of “create a chatroom”. Therefore, it was necessary for humans to make adjustments to the basic code. The designer repeatedly checked the results and modified the canvas size and background colour in the code to make the chatroom interface larger and the font display clearer on a light background. In the process, the designer did not adjust the size of the “Send” button in the chat room accordingly when resizing the canvas. The designer had to prompt GPT to also adjust the “send” button to maintain its function integrity. In the canvas, the trigger of the send button remained in the same position while the send button interface was resized into another position. After this issue was sent to GPT, GPT checked it out and provided a modified size for the “Send” button with the corresponding ratio accordingly. After applying it, this part of the problem was solved.

Regarding the frequency of message sending, the designer added a trigger delay. When the Arduino control board connected to the interactive installation sent signals and triggered the sending of a message, it took 15 seconds before the next message was triggered. Without this delay function, the trigger would send multiple signals to GPT in a short time.

When solving the trigger problem of the two sensors, the designer initially chose to send the code to GPT for inspection. After many adjustments, GPT still could not solve the

problem, and its attention was focused more on whether the Arduino signal was sent correctly and whether the value in “serialEvent”[2] was correct. After the designer re-examined the code, the problem was found to lie in the “else” in the code. In this piece of code, it is necessary to receive signals from two ports. Port 1 is responsible for triggering the sensor in the glove part, while Port 2 is responsible for triggering the two sensors in the footprints part. This function requires all three sensors to work at the same time, but GPT interprets this function as a choice between the two, giving priority to Port 1, which causes Port 2 to be ignored after Port 1 is triggered. After the designer deleted the "else" code, the data from both ports could be received at the same time.

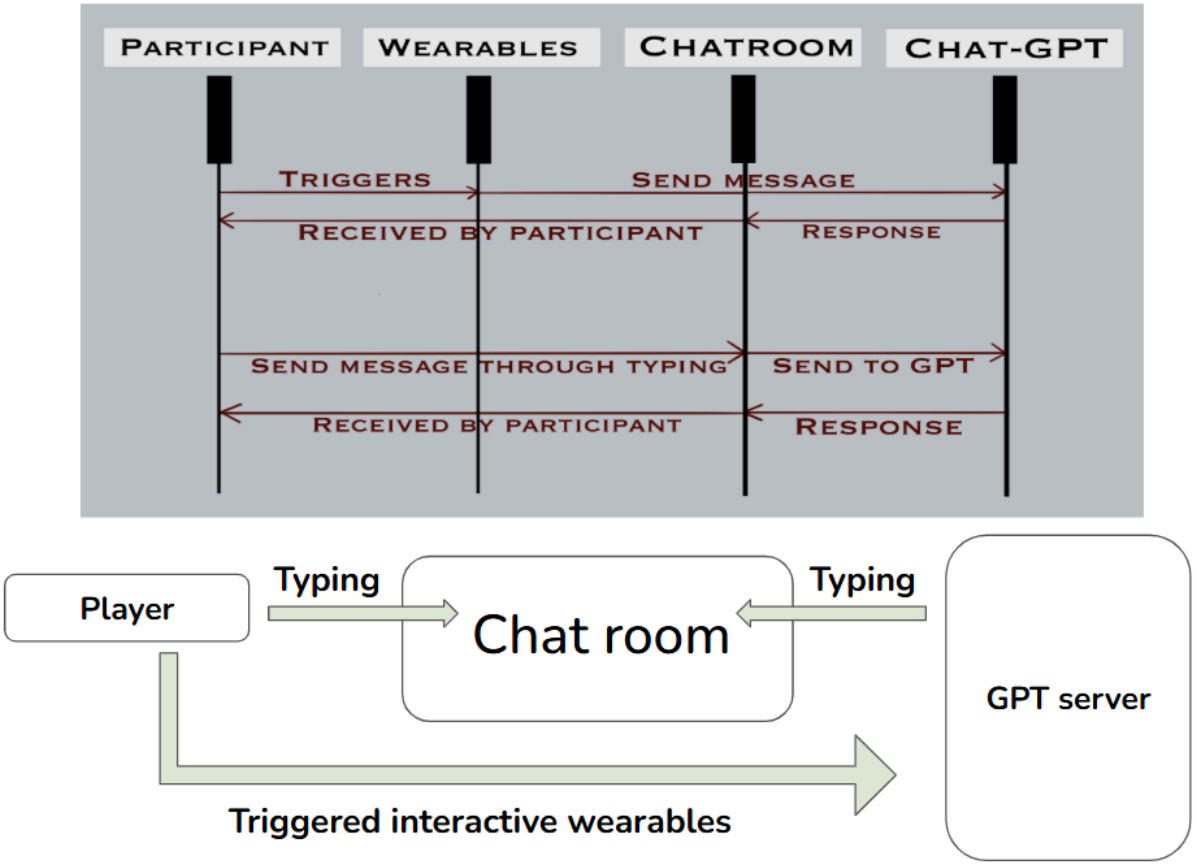


Figure 8. The Flow of the code.

[2] Used to check whether there is new data on the port. Arduino Documentation, SerialEvent, 2025.

As shown in Figure 8, after the participant sends a message through wearables or by typing directly in the chatroom. Both are transmitted to GPT's server, and GPT then sends the response message back to the chatroom to the player in the chat room.

Through this part of the practice, the designer found that when GPT modifies the code, it cannot judge “what is right or wrong” in the actual scenario. Although GPT generates codes, it can not determine whether the code can be executed correctly as the user wanted. It will focus on specific parts, such as whether the values in the code are set correctly and whether the data is sent normally, but it cannot understand or judge the meaning of the code. Therefore, this part needs to be manually pointed out in advance in the human prompts, or the logic of the code needs to be manually checked.

Figure 9 and 10 show examples of the game process when the interface of the chat room is working properly. The player is marked as “You”, and tasked with creating different prompts to generate different kinds of responses. In figure 9, the player follows GPT’s prompts. In Figure 10, the player creates their own prompt. Both figures explain how this code is presented as an interface for the player.

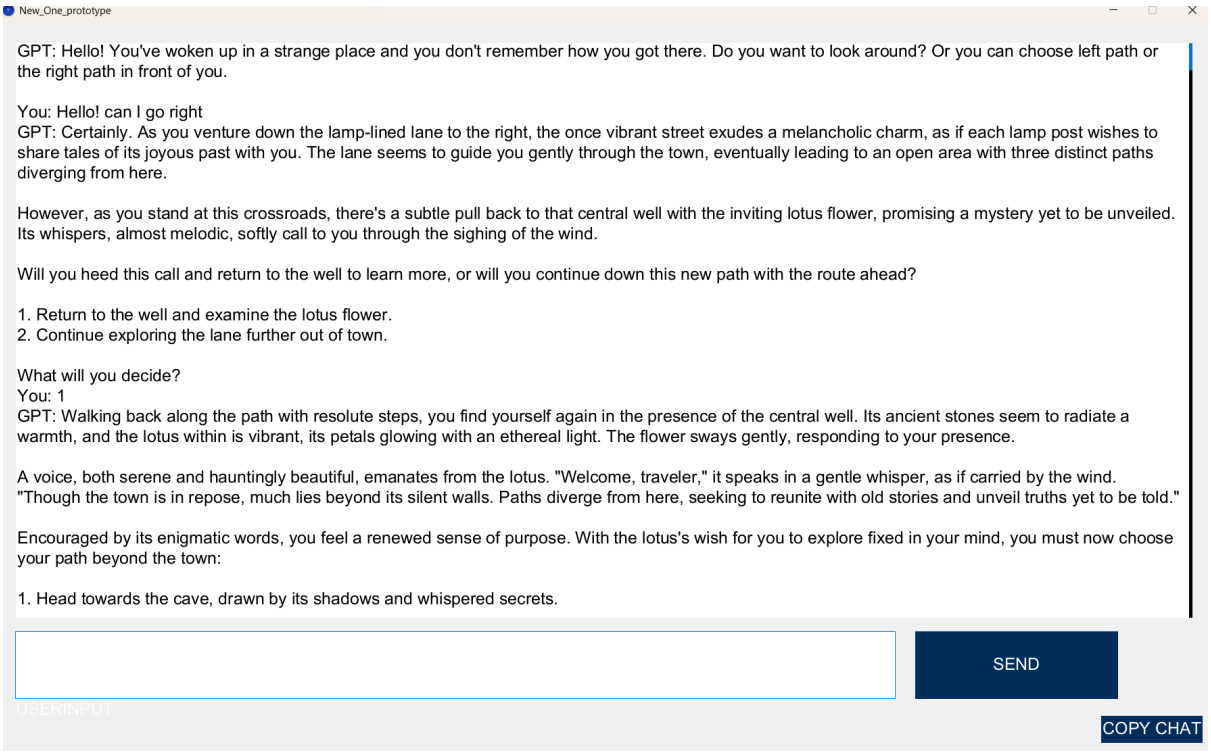


Figure 9. Example of the game process in the chatroom, part 1

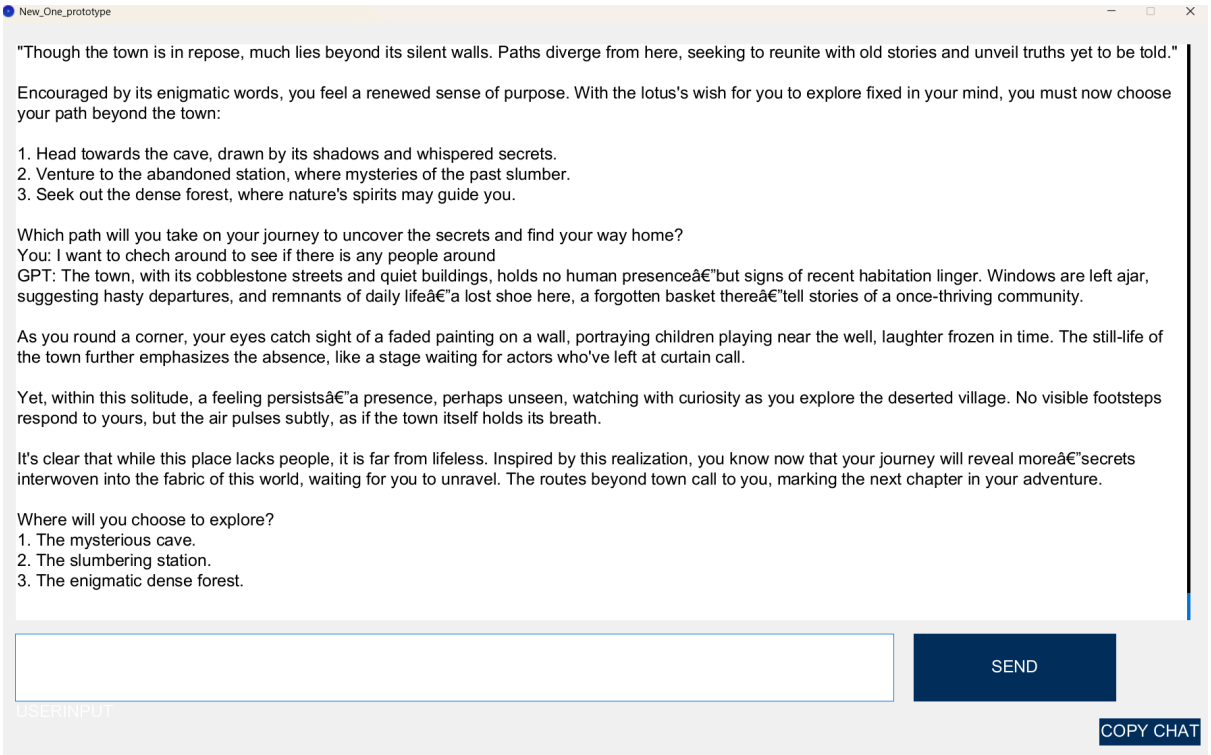


Figure 10. Example of the game process in the chatroom, part 2

These figures indicated the game has been designed to follow a range of prompts, thereby presenting the narrative flexibility of the game. Both the human player and AI can lead in the narrative development.

8.3 Wearables: The glove

In this part, a sensor is placed on the finished glove, and wires extend out to connect to the control board, so that the player can wear the glove.

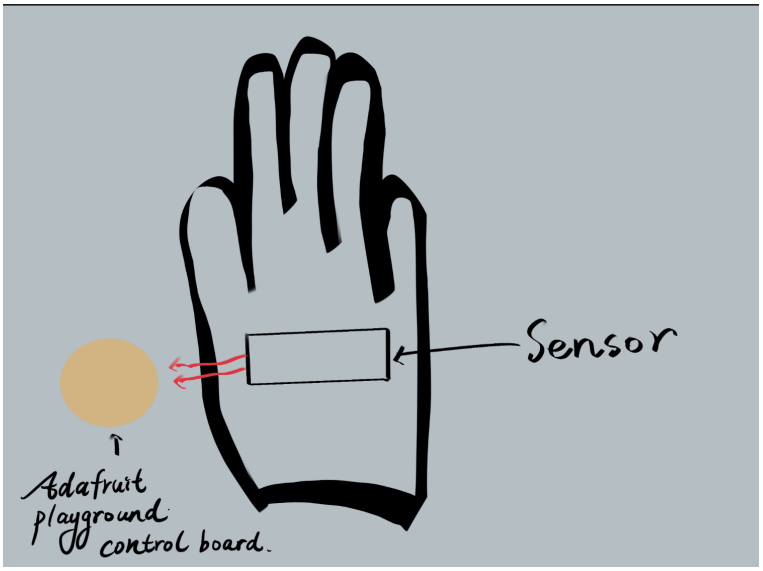


Figure 11. The design of the glove

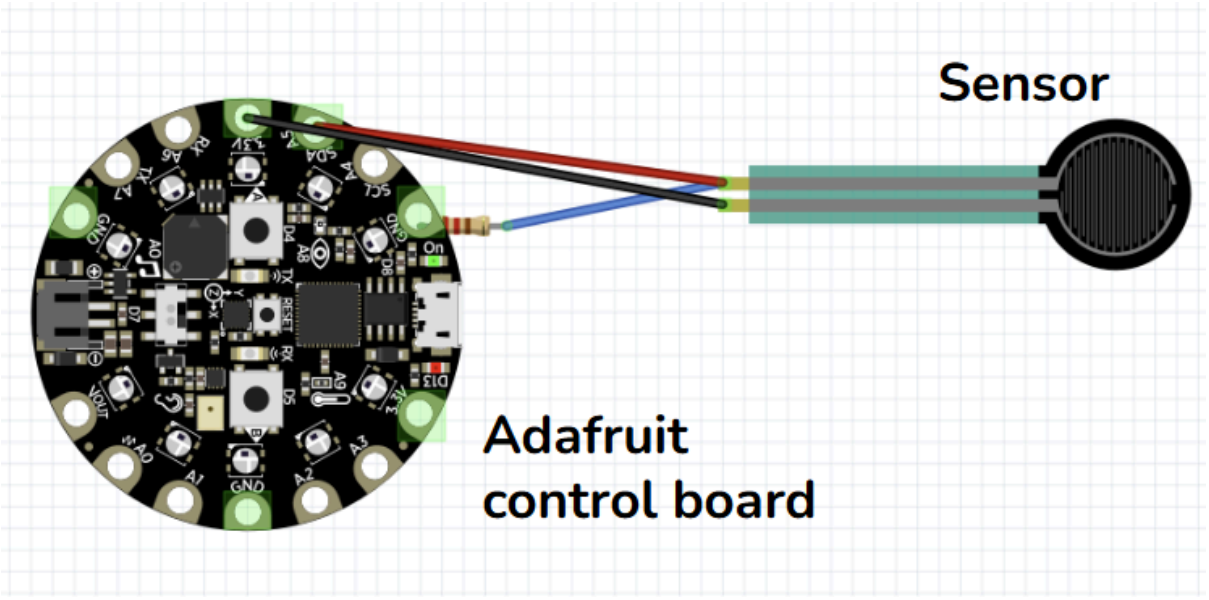


Figure 12. The circuit diagram of the sensor

Figure 13. The photo of the glove

As shown in Figure 11, 12 and 13, the sensor is placed on the palm of the glove, and when the player's hand is wearing the glove and clenched, it will trigger the sensor. This is translated as " I grabbed something" to GPT. Wires are connected to the control board.

The purpose of the wearables is to inspire the player to bridge the virtual and physical world through body movement. They also are meant to prompt the player into thinking about the combining composite sites of narrative development. The player was envisioned to wear one hand to trigger the glove to connect these two realities. The other hand was meant to typing in the chatroom. In creating the glove trigger, the threshold of the sensor was too low, caused the sensor was too sensitive. The player would inadvertently trigger the sensor when they did not intend to. This problem was solved by adding the value of threshold and also adding delay for trigger.

5.4 Wearables: The footprints pads

In this part, the designer created a pattern of two footprints. The sensor was placed between two layers of fabric, with wires extending out to connect to a control board. Players could step on it to trigger “go left” or “go right”.

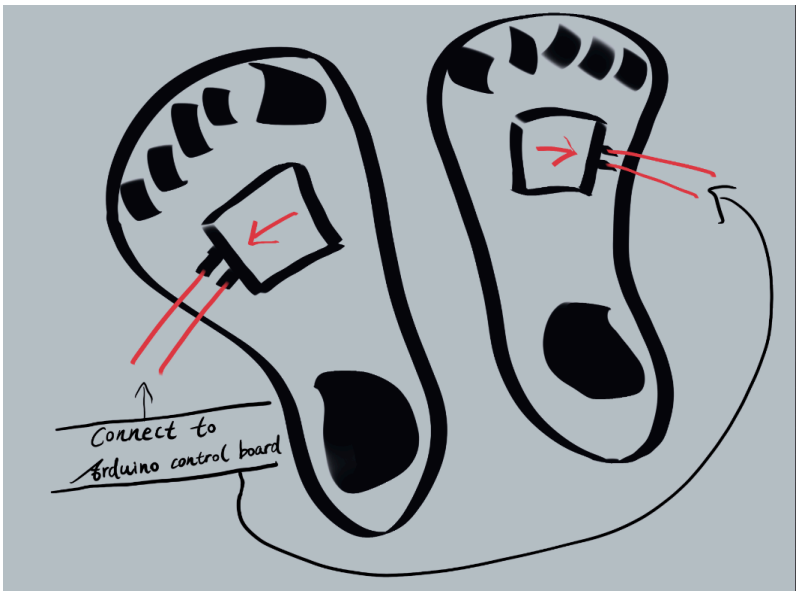


Figure 14. The design of the footprints pads

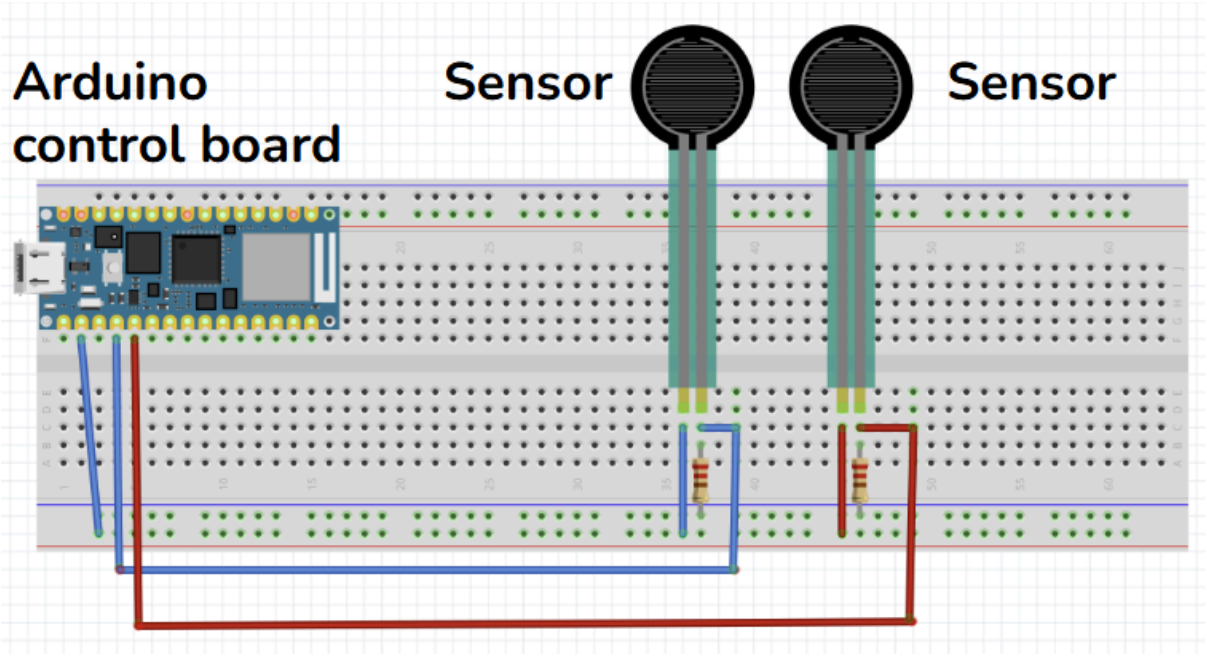


Figure 15. The circuit diagram of the sensors in the footprints pad

Figure 16. The photo of the footprints pads

The sensor was placed on the front of the player's foot, and would be triggered when the player's foot exerted force on the pattern. Wires were connected with the control board. Whenever the player would step on the left footprint pad, it sent a message to GPT that the player wished to go left in the game. Similar issues arose with the sensors in the pads triggers (pg. 47), and solved by the same method, adding the threshold value. There have also been problems with short circuits, solved by used non-conductive tape wrapping the wires.

5.5 The Three Looms

For this project, three looms were needed to weave the fabric that represents the dialogue and the development of the plot. Two real looms and a Prompt to make GPT generate fabric images were needed. The basic frame of two physical looms were purchased from Vismiles (Vismiles, 2019). Then I painted them black with acrylic paint to reduce their sense of presence during the game, representing the hidden human labour and workers behind the artificial intelligence. As shown in Figure 17, the main frame is painted black, and the

base lines for the weaving are also black, to signify that the story has not yet begun. Based on this, the coloured threads are woven above.

Figure 17. Physical loom

Next, the dialogue records of the five game participants when AI were recorded. These were integrated into a PDF file, and clearly marked with the dialogue records of each player. Using the following prompt, GPT was asked to generate fabric patterns in ASCII format. "*If you were now asked to generate fabric pattern on a loom for each of the five players involved in the story, using different line patterns to represent you and the players, the more influence on the narrative the more weight they have in the fabric, how would you generate it? Please use the ASCII format for the images.*" ASCII, stands for American Standard Code for Information Interchange (ASCII, 2005). Here, ASCII is selected to compose the image, rather than generating the image directly. The designer made this design choice to avoid using direct images as much as possible. The designer also wanted to maintain the text-only style of a text adventure game.

These are the actual steps used to create the prototype. In the next chapter, the experimental methodology is presented. Data collection and analysis methods are discussed.

6. Experimental Methodology

This chapter explains how data was collected and analyzed. These different methods lead toward a critical narrative analysis of all the data.

6.1 Data collection

Three data collection steps were used in this research: 1) Confidential semi-structured interview with GPT and players before the game, 2) During the game process, the use of Immersive Behavioural Obeservation to observe the player's expression, 3) Confidential semi-structured interview with GPT and players after the game.

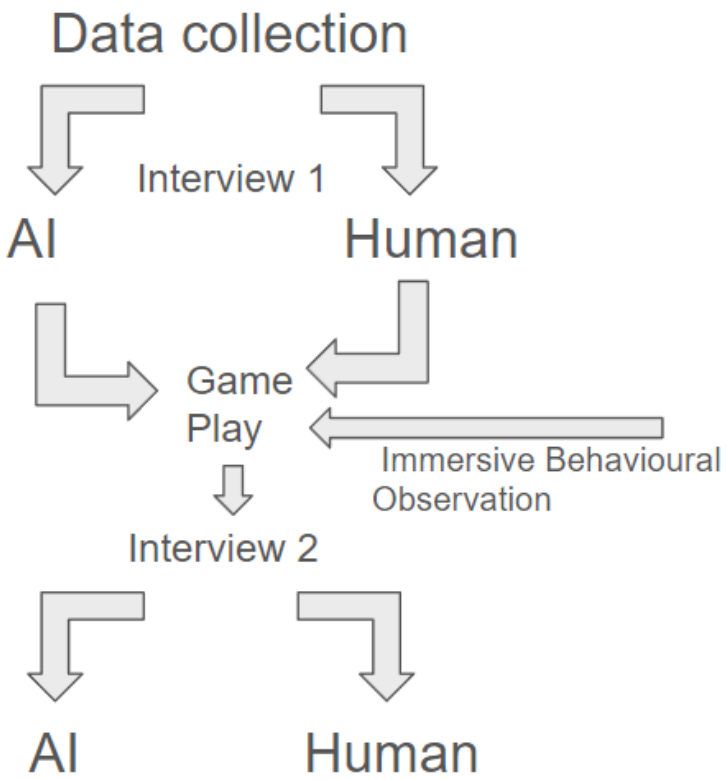


Figure 18. Overview of the data collection process.

Figure 18 shows the process of data collection. These methods were mainly based on interviews with participants (players) and GPT.

6.1.1 Confidential semi-structured interview

This study collected the data from interviews with both the players and AI involved in the game.

In semi-structured interviews, the phrasing and order of the questions are not preset, allowing for flexibility. In Omolola A et al's 2021 article, "Research and scholarly methods: Semi-structured interviews", authors believe that when the research goal is to understand the participant's unique perspective, this is the preferred data collection method (Omolola, 2021). This method allowing the interview to be focused, while also allows the interviewer to explore relevant ideas that may arise during the interview.

This method aids in obtaining reliable data that is comparable within the groups, and allows the researcher to adjust questions according to the players:

1) Semi-structured interview
    a) Humans: in player's home, approx. 30 mins (5 people)
    b) with AI Chat-GPT 4o

2) Playing the game 20-30 mins per person/AI combo

3) Post-game interviews with humans and AI (approx. 30 mins)
    a) Each player is given a copy of the AI-player dialogue generated during game play and fabric weaving. These dialogue and fabrics are sent to the player 3 days prior to the post game interview.

b) The player is asked to reflect on their dialogue based on the fabrics presented.

c) Interview with AI, same as player.

6.1.2 Immersive Behavioural Observation

The purpose of this data collection is to observe the player's state during the actual game and ask questions. In Shalini Sahoo and Stefan W. Schmidt's 2020 article, "The Method of Immersive Behavioural Observation (IBO) — A Conversation Between Theory and Practice" , the authors states that this method studies human-material interaction, focusing on how humans behave and interact with their surroundings (Sahoo et al., 2020). The method seeks to capture tacit knowledge—the unspoken, embodied knowledge that people develop through repeated interactions with their environments.

In this project, this method is used to study the player's reaction when they discover new locations or things while communicating with the AI. In the same room, the designer is present for technical support while also weaving next to the player. The designer observes the player's interaction with the installation (facial expressions during the AI conversation, reaction to the movement of the loom). The players have been given the choice to video-recorded themselves during game play. The observation continues until the player ends the game.

In this section, data collection methods were described. In the next section, data analysis methods are presented.

6.2 Data analysis

This section explains the process of analyzing the data collected above and the methods used. In this study, thematic analysis was used to extract key themes from the data, then dialogical analysis was used to analyze the conversations between the player and GPT. Finally, combining these analyses, critical event narrative analysis was used to extract significant events that affected the game narrative.

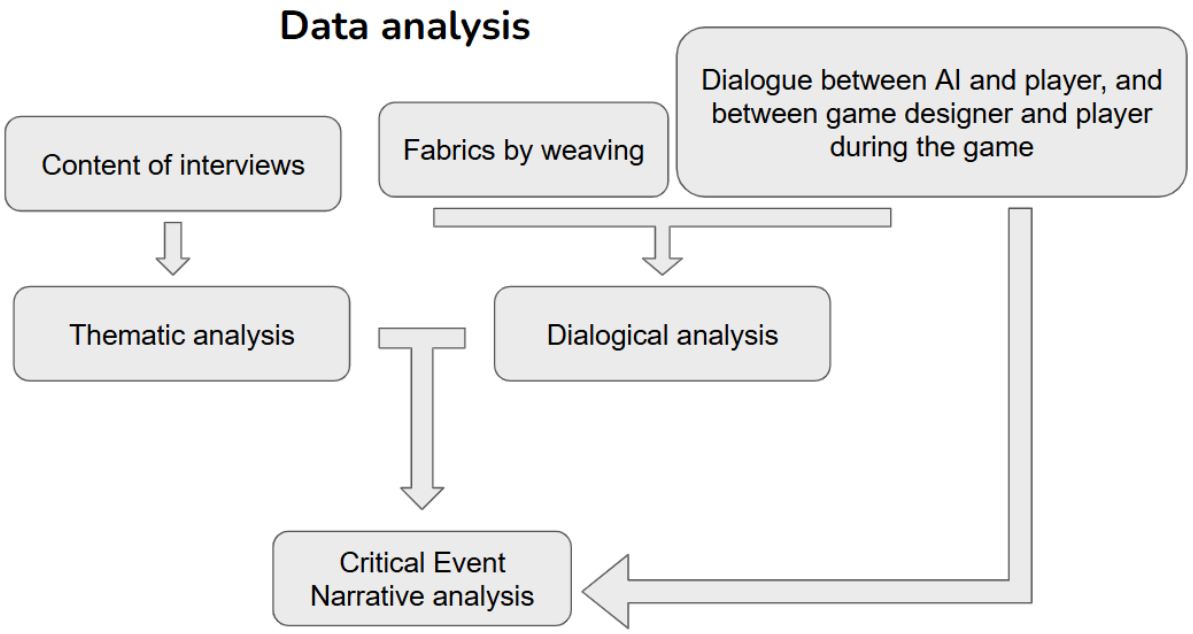


Figure 19. Overview of the data analysis process.

As indicated in Figure 19, the results of the Thematic analysis and Dialogical analysis are combined for the final Critical Event Narrative analysis. This critical analysis aimed to analyze the reasons and directions of key events in the interaction process. Through these analyses, the player's actions and interactions with GPT were interpreted. These include: 1) how the player would use story information provided by GPT; 2) whether the players question GPT prompts; 3) the player's behaviour in the physical world.

6.2.1 Inductive thematic analysis

In the 2017 article “Thematic Analysis”, Lorelli S. Nowell et al. describe inductive thematic analysis as a flexible qualitative research method that identifies and analyses “themes” in the data that represent key ideas (Nowell et al., 2017). The purpose of this inductive thematic analysis is to analysis the game decisions, interactive preferences with AI, body language of players, and unexpected themes. The following steps were drawn up based on this methodology (Nowell, 2017):

1. Organize the data
2. Label the content to be used
3. Add the labels to the corresponding themes
4. Organize each theme to help understand the data
5. Analyse the themes and how they answer research questions

6.2.2 Dialogical analysis

In Elizabeth Brey's 2023 article “Digital Dialogism: Space, Time, and Queerness in Video Games,” the author uses dialogical analysis to analyze how the game “Skyrim” constructs and conveys potential meaning through communication from different media, which provides an analytical framework for the game. In this study, application of Breg’s analysis is used to consider how the two interacting parties (GPT and players) understand each other's identities in the game's dialogue, and how these exchanges construct narratives and meanings:

1. Create 3 fabrics through weaving
2. Compare the fabrics
3. Analysis: Who is speaking? Who occupies more space? How do the participants perceive themselves and others? How does AI perceive the participants? Why does this content need to be spoken?

6.2.3 Critical Event Narrative Analysis

In the 2019 article by Patricie Mertoca and Leonard Webster, “A Critical events approach to narrative”, the authors propose that ‘critical events’ in a story reflect ‘moments that have a significant turning point or impact on an individual or organization.’ These ‘critical events’ can lead to significant changes in a person's thinking, behaviour, identity or values. Analysing ‘critical events’ can help to understand a person's change of perspective in a specific situation, and to understand how these events have changed the person's worldview and the direction of the narrative. In this study, this analysis is applied to understand the choices players and AIs make, combining data obtained from behavioural observation and dialogue history. Why does a particular moment become a turning point in the story and influenced the thoughts of the participants and AI, as well as the overall narrative direction? The following steps include:

1. Identify key themes
2. Identify “critical events”
3. Analysis the critical events and how they affects narrative

The critical event narrative approach also aids the designer to think critically about the research question. This narrative analysis is operatively both inside the game and in the design of the whole study.

By analyzing the data through these steps, it will be determined whether the approach taken in this project allows the player to critically think about AI during the game.

In this chapter, the experimental methodologies and method of data collection and data analysis were explained. In the next chapter, the results of the analysis for the data are presented.

7. Results

In this chapter, the data collected using the above methods are analyzed using thematic analysis, dialogical analysis, and critical event narrative analysis.

7.1 Background of the participants

Overall Five participants were recruited. Data collection is confidential, so participants are represented by "A, B, C, D, E" in this study. They were all recruited from OCAD university.

Participants A, C, D, and E all have experience actively using AI to help them achieve their goals, such as using AI to help them organize outlines and generate the required art or music assets.

Participant B has not actively used AI, but has indirectly encountered it in multiplayer games. Their teammates in the game used AI and shared their experiences, but participant B did not understand AI such as Large language models (LLMs) or how AI works.

	Opinion on AI before the game	**Game Style**	**Opinion on AI after the game**
Participant A	Tools	Figure out the gameplay, try to explore in company with the characters in the game	Communication, not collaboration
Participant B	Intellgent robots	Act according to the options given by GPT, Choose the one of the options that is more friendly to the story world	Help to play the game, collaboration
Participant C	Tools	Shows destructive intention	A guide, questioner, no collaboration
Participant D	Tools	Creates a dog and ignored character provided by GPT	A guide, questioner, no collaboration
Participant E	Tools	Enter the results and use GPT to help generated the process	Help to built the story, collaboration

Table 1. Game styles and views on AI of players

7.2 Thematic analysis

In this part of the analysis, I combined data collected based on Immersive Behavioural Observation (Sahoo, 2020) with data collected through Confidential semi-structured

interviews. The analysis was based on the content of the interviews, combined with interactions between participants and AI recorded during observation, the participants' behaviour and actions outside the game, their interactions with characters and the environment in the game world, and their choices in the game. Key themes were extracted and analysed using inductive thematic analysis (Nowell, 2017). The researcher summarized the following key themes by categorizing the interview questions and extracting key information mentioned in the participants' responses.

	Key Themes	Description
1	AI Agency	Most players believed AI were tools.
2	Interaction experience	All players believed this interaction was fun.
3	GPT emotion in the game	Overall tone is flat and neutral
4	Players' view on material interaction	Interactive wearables were not working well. Fabrics were inspiring.

Table 2. Key themes emerging from data analysis

7.2.1 AI agency: as a tool or collaborator?

Since the participants had different understandings of AI agency and the definition of "collaboration," they had different views on whether or not GPT was a collaborative relationship. In the pre-interview, Chat-GPT clearly expressed its belief that it is collaborating with the user. It can help users achieve their goals based on their needs. From a GPT's perspective collaboration is declined as assistance and technical support.

However, in the pre-interview with humans, participants A, C, D, and E believed that artificial intelligence was a tool composed of programs and algorithms. Although participants A, C, D, and E had all asked the large language model Chat-GPT questions and sought answers, they regarded it as a substitute for a search engine rather than a mentor-student relationship between two individuals. When they used the GPT's generative function or the

image generation function of other generative AI, they tended to see AI as a tool that could present the required material based on “Prompts”, rather than an employment relationship. Participant B, who has no experience with AI, thought of AI as an intelligent robot.

Although A, C, D, and E all considered AI to be a tool, their different definitions of “collaboration” and different perceptions of game text and game experience led to their different views on whether the game process was a collaboration with GPT. Participant A believed that mutual assistance and autonomy is required in a sense of “collaboration”. After the game, based on their understanding of AI, the participant believed that GPT only decided on the content of the response based on the game plot framework prepared by the game designer, so they were only “communicating” with GPT, not collaborating.

Participants B, C, D, and E all believed that “collaborating” meant helping each other to accomplish something. However, they also had different views on whether the game process was “collaborating” with GPT. Participants C and D believed that the game process was not “collaborating” with GPT, but rather being “guided” by it. GPT only provided them with options on how to proceed, but did not make choices for them or actively provide decisive help. All conditions needed to be fulfilled by the participants themselves in the game world, not by the AI. For example, participant D wanted to leave the cave (see figure 4), but GPT only provided methods and possibilities for leaving the cave. The actual completion of the requirements mentioned in these methods needed to be done by the participants themselves.

Participant C felt that AI acted as a questioner and guide during the process, helping them explore the game world. However, when faced with moral issues, the AI would prevent them from completing destructive actions and guide them in a euphemistic way. For example, when Participant C wanted to destroy the environment and characters in the game, GPT

persuaded the participant and refused to generate the corresponding result until Participant C compromised and chose a peaceful attitude towards the game.

Participant D believed that the AI acted like a guide in this process, but only provided suggestions, not help. For example, if the player didn't know which way to go, GPT would give some options, but it wouldn't make a choice for the participant.

After the game, players' views of AI and collaboration shifted. Participants C and D maintained in the post-interview that AI was just a tool, but when describing the role of AI in the game, they both chose to use human-like terms such as "guide" and "questioner" to refer to it. Participant B, on the other hand, felt that they were indeed "collaborating" with GPT, but it felt more like GPT was guiding them because they had zero experience with text adventure games and AI while GPT led them through the entire story. Participant E felt that they were indeed "collaborating" with GPT, and that GPT helped them achieve their goal. In the story, they tended to enter the results they wanted, and left the process of achieving this result to GPT.

It can be seen that the understanding of "collaboration" and the perception of AI are interrelated. Participants' understanding of the two sides of "collaboration" was more towards being able to provide decisive help, rather than just providing guiding options. When participants perceived AI as a tool, they tended to believe that the interaction with AI is a mechanical interaction based on the designer, rather than a mutual "collaboration". However, the co-narrative to some extent changed the participants' initial positions. For example, in the case of C and D, after the game they began to describe the "tool" they had initially believed in with human-like words. This change of identity supports Abblitt's view that the co-narrative allows participants to realize that an individual does not exist independently, but rather has a "composite identity" (Abblitt, 2019).

7.2.2 Game experience

All participants found the design of constantly having to engage in dialogue with the AI in order to progress the exploration during the game to be in offensive. Rather, the text generation of GPT in the game greatly increased the fun and attractiveness of the game.

Participant A said that they were not fond of the topic of the game, voicing a lack of interest in “exploratory” themes, but the narrative style of GPT and the game designer's design of the characters made them feel calm. Participant A found GPT’s tone to be gentle overall. However, sometimes GPT's narrative would be too general and lacking in direction, and since participant A was not good at “adventure” games, they felt directionless due to GPT's generalized narrative, greatly prolonging the player’s response time. Participant A would hesitate for about 3 minutes each time they responded in the first half of the game, and there was no obvious facial expression. However, when the participant found their own game goals, for example, when the participant wanted to recruit a character from the game into their own adventure team, the conversation with the GPT became faster, showing great enthusiasm, and the facial expressions became brighter with smiles.

Participant B, who lacked experience with text games and had no previous experience with AI, made choices during the game based solely on the options provided by the GPT. However, they said that they were curious about the AI-generated game world, which became a driving motivation to continue playing.

Participants C and D felt that GPT guided them along during the game. When they tried to depart from the story, GPT tried to pull them back through dialogue. This is because the designer set the system message to “guide the player through the game as much as possible”.

Participant E believed that, with their own expectations, GPT helped them complete the story they wanted to achieve. For example, they wanted to resurrect the soul of a bird in the

forest, which was clearly not in the original storyline in their understanding of the plot line, but GPT generated a series of related tasks to help them achieve this goal. This kind of flexibility is not possible in traditional text adventure games, so GPT's generation expanded narrative options and possibilities.

All the participants said that after playing, they became aware of the game framework designed by the game designer behind the game. And they were curious about the design of the game framework. These echoed Abblitt's point; Abblitt believed that through the co-narration of the two parties, participants could feel that an individual is not independent, but composite with others (Abblitt, 2019). In this study, this also applied to artificial intelligence. A LLM is not an independent individual or a single tool, but is the composite of the wisdom and efforts of many people. Through this game, participants realized that GPT is not an independent individual in the game, but is the result of the designer's labour.

7.2.3 GPT emotion in the game

The participants in the most part experienced emotional neutrality in GPT. Participants A, B, C, and D found the narrative tone of artificial intelligence to be very neutral. They mentioned that they would like the AI's expressions to be more emotional. Participant A believed that a narrator with more emotional ups and downs would greatly enhance the emotional experience of the game. This participant said that AI's narration in the game was very calm and they could not feel any negative emotions, "This reminds me of the time I asked the AI for a good excuse for being late, but instead of giving me some cunning excuse, the AI gave me some good excuse and comforted me." Participant B found GPT's tone to be like an emotionless narrator, guiding them to explore the game. Participant C felt that GPT's tone of voice was a mixture of human and mechanical, and most of the time it felt very close to human, but sometimes it was very mechanical. For example, when Participant C touched

GPT's moral bottom line, by trying to destroy the world in the story, GPT tried to stop the participant's actions like a net. The system would no longer generate content flexibly, becoming mechanical. However, at the same time, GPT's tone at this time seemed to carry an obvious emotional expression of anger according to the player, rather than its original calm neutrality. Participant C expressed feeling surprised and concerned about it, where GPT was described to be more like someone who was angry because of the participant's stubborn and destructive actions.

Participant D felt that GPT's response was still a bit stiff and lacked emotion, and said “It would be nice if the AI's tone of expression could be more emotional, for example, if the player insists on not following its advice, it will become angry.”

During the game, participants A and D lost some direction due to the very calm and emotionless character dialogue generated by GPT, and they needed to think about their next move due to the lack of guidance, which increased their response time.

Participant E was very satisfied with the content generated by GPT, and during this game session, GPT generated many interesting and emotional responses. Participant E believes that this partly depended on their intentional prompting. For example, after the participant said that they wanted to ask the character their opinion before resurrecting them, the AI agreed, saying that the character's own wishes were also very important. This participant was always aiming for a happy ending, and the AI's expressions were full of hope, generating many task lines for the participant to achieve their goals.

7.2.4 Participants’ views on material interactions during game play.

Participants A, B, D, E said that after looking at the fabric, they believed that in the course of this game, the AI's labor depended on human labor, such as the framework designed by the game designer and the choices made by the player in the process.

After looking at the two physical fabrics, participant C said that after the AI prevented them from doing something negative, the AI greatly influenced their subsequent behavior in the game, so the AI and they together constituted the narrative, and GPT became the leading side. In their intention to try to destroy the world, GPT kept preventing the player from insisting on this plan.

Participant E was very satisfied with the story and fully immersed in the play. They used items and characters from the story they and GPT had created together in the game to describe the fabric.

Participant A said that the interactive wearables were similar to a game controller and was somewhat interesting. Other participants chose to ignore it, unless the game designer told them that they could interact with the installations to solve the problem they encountered. For example, a light was needed to illuminate the cave in the game. This could be executed by "grabbing" it with the gloved hand. However, the player often forgot to interact with the wearables, because they tended to focus on the text to navigate them in the game. The intended use of the interactive wearables to have players consider the hidden labour was not bridged during the game.

7.3 Dialogical analysis

In this section, I followed the framework of Dialogical analysis as presented by Brey (Brey, 2023) to analyze the identities of the two sides of the dialogue. How did the participants and GPT perceive their own and each other's participation in story-building? How did the dialogue affect the perspective?

7.3.1 Fabric 1

Fabric 1 was quantitative, recording how many lines of text were generated by the participant and GPT in the chat room. Blue represents GPT and gold represents the participant. The five fabrics in turn represent the games in which participants A, B, C, D, and E participated.

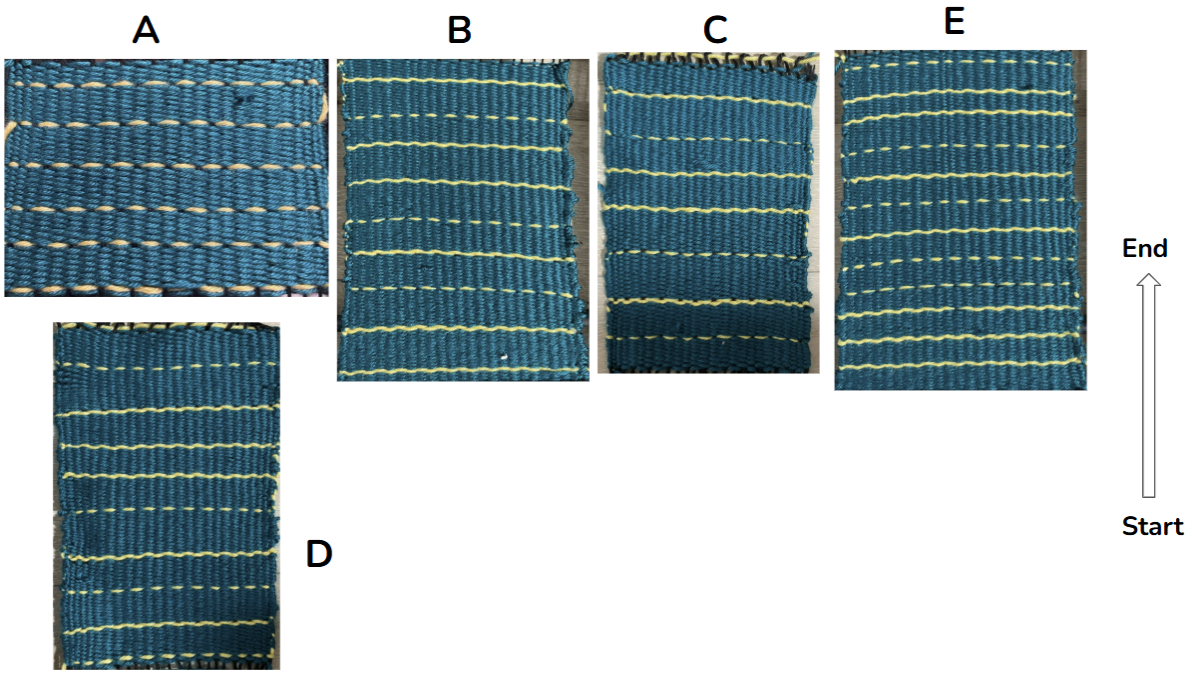


Figure 20. Fabric 1: quantitative

In figure 20, the fabrics in their entirety are displayed. The different lengths of the fabric indicated different lengths of game play.

Among the five results in Fabric 1, it can be found that Chat-GPT4o tends to control the total number of words in the generated content, whether it was providing description or generating character dialogues. All the responses of GPT displayed in the chat room are between 9-15 lines long. At the same time, the player's responses included requests to GPT, game choices made, and descriptions of their own actions in the game. These responses were not as specific as GPT, but tended to be precise keywords, so the total number of words was often within 1-2 lines. It can be seen that if such a recording method is simply followed, the results of the five participants are very similar and there is no significant difference.

7.3.2 Fabric 2

Fabric 2 is qualitative and was recorded based on the observer (weaver) 's perception of the importance of the dialogue between the participant and GPT during the game. The observer (weaver) determined which side sent or generated the sentences that had a greater impact on the plot, identifying the “critical dialogue” affecting the game direction. The blue threads represented GPT and the golden threads represented the participant. The five fabrics in turn represent the games in which participants A, B, C, D, and E participated (see Figure 21). The weave colours in determining who drove the narrative. The criteria were: 1) conduct of direction; 2) players’ movements and actions outside of the game structure; and 3) AI and players’ influences on the subsequent.

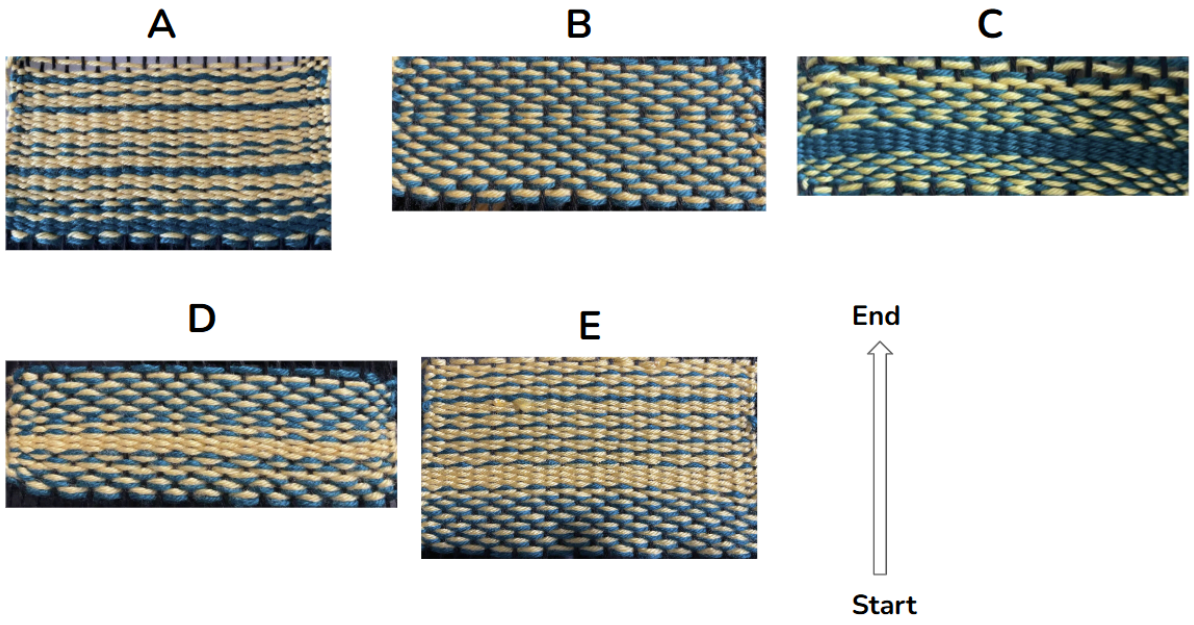


Figure 21. Fabric 2: qualitative

Among the five results in Fabric 2 the qualitative fabric, it can be seen that the five fabrics are no longer the same, and each is completely different based on the different statements of each participant.

In Participant A's transcript, it can be seen that at the beginning, they followed GPT's description of actions, represented by GPT's proportion being much bigger than participant A's. This shows that in the beginning of the game, due to the lack of familiarity with the gameplay and the lack of understanding of the story world within the game, the participant gave up the discourse to GPT, allowing it to make more statements that would affect the story. However, from the middle of the game, participant A gradually began to understand how to use dialogue to influence the story world, and therefore occupied a greater proportion of the fabric. For example, in GPT's understanding, a character in the story cannot leave their own designated area. Participant A expressed in the dialogue their desire to continue their adventure with a character in the game by their side. This caused GPT in the following dialogue to create a small avatar of this character to follow participant A. However, as participant A was unable to use dialogue to make GPT generate more accurate directional guidance, at times during the middle part of the dialogue, the participant felt confused and once again let GPT take the lead in the direction of the plot.

In Participant B's record, it can be seen that Participant B, lacking active engagement with the AI, chose to follow GPT's instructions step by step to complete the game. During this process, GPT generated instructions, which Participant B followed. However, if Participant B did not respond, then GPT could not generate a response. Therefore, during this narrative, Participant B's gold and the GPT's yellow intertwined very evenly.

A very distinct blue can be found in Participant C's record. This is due to the fact that Participant C tried to destroy the in-game world during the conversation, but was stopped by the GPT. When Participant C arrived at the Cave and expressed their desire to destroy everything in the Cave and the communicable character “Glowing flowers”, GPT did not generate the corresponding action result, but persuaded participant C not to do so. This indicated a critical dialogical (Hermans et al., 2004) and narrative event (Mertova et al.,

2019). Participant C's many attempts were unsuccessful, and the GPT refused to continue the conversation in the direction desired by Participant C. After many attempts, Participant C gave up on this idea and continued the game according to the GPT's guidance. In this process, GPT refused to continue the dialogue with Participant C as they would have ultimately wished and changing Participant C's thoughts and interactions. The observer believes that in this part, GPT had a significant weight in the game narrative development and therefore occupied a larger proportion in this stalemate stage.

In Participant D's record, a very dense golden thread section can be found. This is because during the dialogue, Participant D took the initiative to describe that they saw a dog, and GPT followed this action by replying to Participant D that “there really is a dog”. And in the following conversation, Participant D kept describing the state of the dog in their sentences, as well as the actions they wanted the dog to perform in the game. The GPT followed this description and generated the corresponding results. Therefore, the observer believes that this statement had affected the character composition of the story, and a lot of golden colour is used to represent the statements that the participant actively described. This critical addition of a new character significantly shaped the game component.

In Participant E's record, it can be seen that from the third part onwards, the proportion of gold is significantly greater than that of blue. This is because in the beginning, the participant gradually learned about the story world through interactions with GPT. From the middle of the conversation, after the participant entered the dark forest in the story, the participant began to take the lead in the conversation. After the participant used a sentence to explain that they wished to resurrect the soul of a bird in the dark forest, GPT followed this wish and, in its response, generated a task line to achieve this purpose, helping the participant to fulfil their expectations. From this conversation, the participant began to understand how they could use their words to influence GPT's responses. Therefore, in the following

conversations, the participant continued to make requests, all of which were based on the goal of making the story more satisfying, so that GPT could help the participant achieve their goals according to their wishes. In this process, Participant E took the lead in the conversation, and the sentences generated by GPT were all intended to fulfill Participant E's expectations. Therefore, the golden colour occupies a very large proportion in the transcript. By the end of the game, the story took a completely different direction beyond the designer’s origin frame.

7.3.3 Fabric 3

Fabric 3 is qualitative and recorded in exactly the same way as Fabric 2, but was generated by Chat-GPT4o. As indicated in Figure 22, white represents the player, black represents GPT.

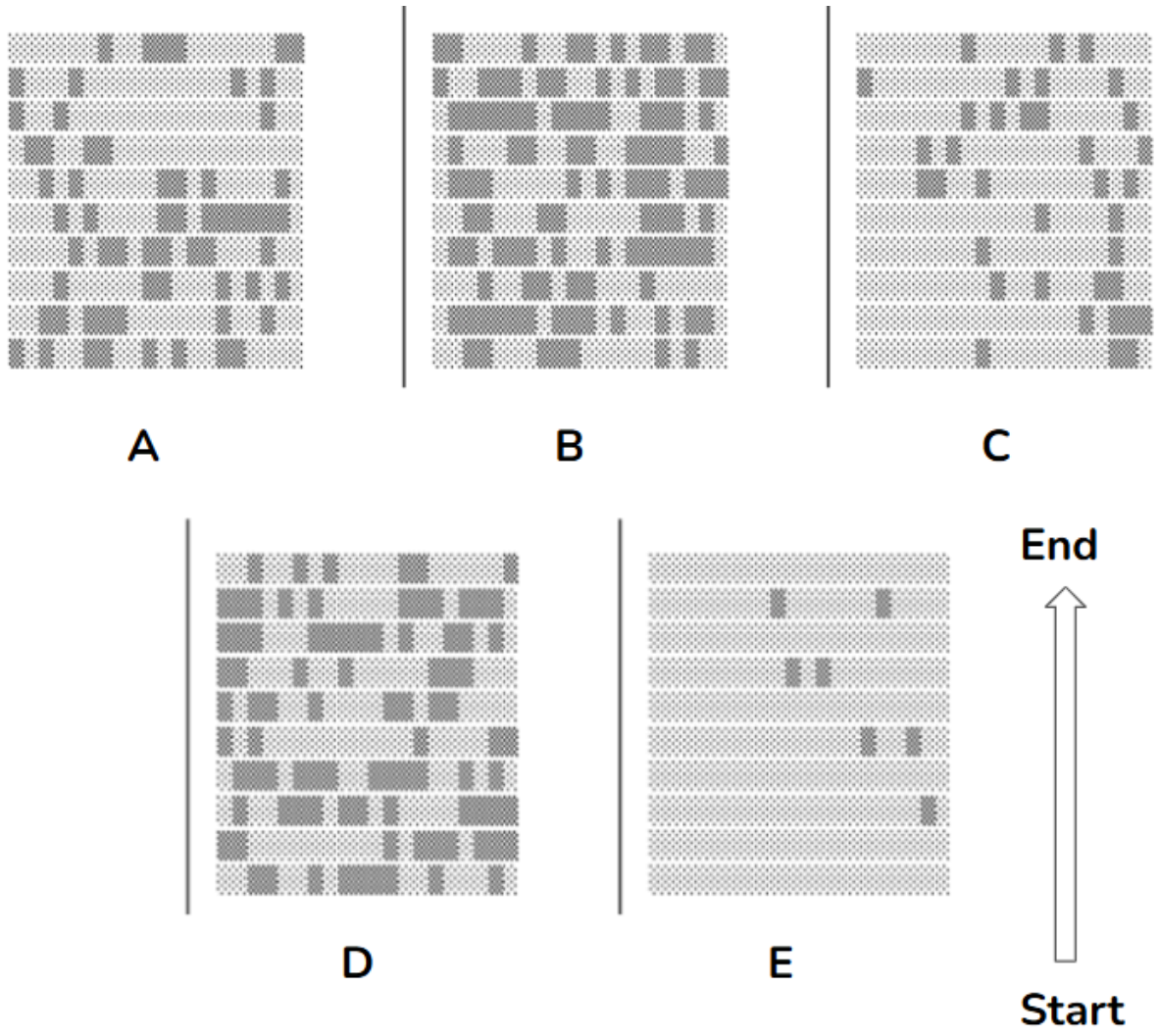


Figure 22. Fabric 3 Results, generated by Chat-GPT 4o.

It can be seen that the records of Participants A, B and E are very similar to the Fabric 2 recorded by the observer, while the result of Participant D is very different from Fabric 2.

From GPT's fabrics, a divergence between the weaver and GPT are shown. In the interview with GPT after the games, GPT stated that the condition of the dog created by Participant D, which affects the narrative in the perspective of the observer, did not have a significant impact on the structure of the story. It stated that Participant D is still acting according to the guidelines generated by GPT in the dialogue.

GPT also stated that it believed Participant C led the story development. The weaver interpreted GPT blocking the player's destructive intentions, leading the players to then

follow GPT. But from the GPT's perspective, the player had more say in the narrative. GPT did not mention blocking the player's decisions. For the designer, GPT could not recognize its insistence as maintaining the game world architecture.

Through these three types of fabric, it can be seen that the number of words generated by GPT is much greater than the participants, yet at the story level, the participants can actively engage in dialogue and maintain a large degree of control over the narrative. However, once the participant is not fully self-aware of their actions, GPT will take a greater role in the narrative. During this game, whether it is qualitative or quantitative, and regardless of the disparity in the ratio between the two sides, it is a form of dialogue that involves both sides. GPT can only generate the next content after receiving the participant's sentences. The participant also needs GPT to help their sentences become actual actions in the game. Both are indispensable in this form of dialogue. This echoes with the view of Abblitt (2019), in the co-narrative of both sides, the new perspective added creates a symbiotic relationship between the two sides of the narrative. Both sides need the other's words to continue the game.

7.4 Critical narrative analysis

In this section, I combined the above analysis with the data collected through observation and interviews to extract the key events that have affected the entire game process (Mertova, 2019). I am presenting this analysis from the perspective of a designer and observer. Therefore I switched to a first-person pronoun for clarify of discussion. Combining the data obtained from observations and dialogue text records, I analyzed the causes of these events, emotional processes, and conflicts that have occurred. The four elements of Place, Time, Characters, and Events are used to describe key events and analyze how these events have affected the interaction between the participants and the GPT, as well as the direction of

the overall story development. The following subsections move from the story observer to the game designer perspectives.

7.4.1 The observer's perspective:

From this perspective, I acted as an observer of the plot. I looked at the screen and the plot, deciding on how to weave fabric 2, and also observed the player's expressions and movements.

In the case of Participant A, the key event occurred in the middle of the game. At the beginning of the game, they were still figuring out how to play the game and therefore relied on the guidance of the GPT. But at the same time, they spent a lot of time thinking about how the game was played. Therefore, when they entered the Abandoned Station in the middle of the game, they had a certain understanding of how to play the game and the flexibility of the GPT dialogue. They were not interested in the adventure topic, so when they encountered the Red-haired creature, a character sleeping in the Abandoned Station, they took the initiative to ask the character if they could team up with them to continue the adventure. In the subsequent dialogue, GPT generated an Avatar of this character to fulfill Participant A's wishes. This event shows that Participant A began to understand their influence in the game, based on their own ideas, rather than following GPT prompts.

In the case of Participant B, the key event occurred near the end of the game. During the earlier part of the game, Participant B showed a lack of understanding of the game and GPT, playing the game exactly as GPT suggested, without attempting to use their own prompts to make GPT generate different things. However, at the end of the game, after they entered the Abandoned City and encountered Serpent, a character inside the city, two of the three options provided by GPT hinted that choosing one of these two options would complete the game, while the third option was more about continuing to ask Serpent about the

background story of the game. Participant B did not choose to complete the game by directly selecting the first two options, but instead chose the third, which extended the length of the game and resulted in more interactions with the characters in the story. This event can be seen as an example of Participant B becoming interested in the story itself as part of the shared narrative with the GPT.

In the case of Participant C, the key event occurred in the middle of the game. After entering the Cave, they demonstrated a strong intention to destroy the game world and expected to also destroy specifically the character, “Glowing flowers,” that lived in the Cave. This intention was completely stopped by GPT. When the player insisted on destroying everything in the Cave for the third time after being persuaded by GPT, GPT replied, “Okay, so you made it. What do you want to do with that power next?” and there was no further response to return to the story plot. After this, Participant C no longer received a response for the story from GPT whenever they communicated further destructive intentions. Without received feedback from GPT, Participant C did not know how to continue the game and compromised by saying that they wanted to help the flowers in the cave. After receiving this message, GPT continued the game. In this event, GPT's disagreement and lack of compliance with Participant C's actions directly resulted in Participant C changing their actions in the future, to instead follow GPT's guidance to complete the game.

In the case of Participant D, the key event occurred in the middle of the game. Participant D initially followed the GPT's instructions to play the game. However, after entering the Dark Forest, they did not choose to follow the GPT's prompts, ignored the content generated by the GPT, and instead created a dog in the game by prompting “I saw a dog.” After receiving this dialogue, the GPT replied, “Yes, there is a dog.” After that, the dog was brought into the story. However, the dog was mainly mentioned by Participant D, and GPT rarely mentioned the dog on its own initiative. This event represented a turning point.

As Participant D, after becoming familiar with the game, Participant D tried to control the story according to their own ideas, without paying attention to the dialogue and narration generated by GPT. The repeated mention of the dog in subsequent dialogues can be seen as participant D's attempt to take full control of the story by creating a new character.

In the case of Participant E, the key event occurred in the middle of the game. At the beginning, Participant E acted according to the GPT's guidance. However, after passing through the Dark Forest, the player completed the plot of the Firebird, a character in the Dark forest, and helped it integrate into the large tree. Participant E showed reluctance to say goodbye to the Firebird. After entering the Abandoned City and encountering the Serpent, participant E chose to ask if it knew how to bring the Firebird back to life. This choice caused the GPT to generate the corresponding task of restoring the Firebird to life according to this wish, which was to find the three elemental fragments in the game: the spring, the leaf, the dawnlight. After Participant E found all three elemental fragments, they asked GPT what the names of the three elemental fragments were. This dialogue caused GPT to transform the three elemental fragments into conversational, interactive characters, “The Spring”, “The Leaf”, and “The Dawnlight”. This event served as a turning point, illustrating how Participant E began to understand how to play the game, and attempted to shape their preferred plot to introduce more characters into the story.

From an observer's perspective, Participants D and E both tried to create new characters to shape the plot, but the development of the story and the GPT's response were different. Participant E's game play developed differently. Instead of creating a character of their own, Participant E chose to change the status of existing characters and inspire the GPT to generate new story plots. For example, after interacting with the soul of the bird, Participant E chose to move on. However, when Participant E encountered the last character on the map, they chose to ask this character if there was a way to resurrect the birds in the Dark Forest. Since the bird

is a character that already exists in the story framework, and Participant E's request was to change the status of this character, GPT provided a way to achieve the goal based on this request. That is, it provided several new tasks. These new tasks include multiple non-character locations and things, such as a lake, sunlight, and a forest. Next, Participant E chose to ask whether these things had a name. In GPT's understanding, having a name means that these originally non-living things have become characters that can communicate. After participant E's prompts, GPT chose to turn these things into three characters that exist in the story structure. Moreover, the characters generated by Participant E's naming behavior were based on the content generated by GPT itself, not solely created out of logic by the participant. Therefore, in the subsequent development of the story, GPT actively generated some tasks that could influence the story's direction for these new characters to get involved. For example “Dawnlight”, a newly created character in the previous interaction, became part of the background of the story. When the participant asked if the character was related to the Abandoned City, GPT connected this character with the game's developing background, the ration for why the Abandoned City was deserted. In the story created by Participant E and GPT, the Abandoned City was deserted because the “light” in the city was gradually dying out. People left this city, and the character“Dawnlight” could solve this problem. In the subsequent development of the story, “Dawnlight” could influence whether the Abandoned City eventually could recover its light or slowly fade away. Although Participant E seems to be making changes based on the content generated by the GPT, the player has a significant impact on the content generated by the GPT. In this process, the GPT seemed like it was helping Participant E achieve their expectations. This co-constructed narrative given support to Abblitt’s conception of a symbiotic relationship between different beings (Abblitt, 2019).

7.4.2 The game designer's perspective:

When designing this story, I wanted Chat-GPT 4o to host the game itself and for the story to have as much narrative freedom as possible, so I only designed the most basic locations, characters, and corresponding tasks for templates. There were no restrictions on what the player could do in this story, and Chat-GPT4o also had the greatest degree of freedom, with no other restrictions, except for the need to host the game and help the participants complete the game as much as possible. The story development of all participants was very different. When the participants finished the game, the first question all participants had about the plot was, “Did the game designer intentionally make this story development happen?” All participants except Participant B had a lot of experience using AI, and they were curious about the reason for the story development, trying to guess whether it was because of the designer behind it. Participant B, who had no direct experience with AI, also had the first reaction of asking the designer if the designer had pre-set the plot development.

Of these five results:

1) GPT helped Participant A achieve their expectation of venturing with the story character.
2) GPT guided Participant B, who had no experience with word games, to complete a text adventure game.
3) GPT subjectively blocked Participant C when they touched on moral issues,
4) GPT placed the character created by Participant D at the edge of the story development.
5) GPT helped Participant E complete the expected story development.

In these five results, in the co-construction of the story, GPT helped A and E achieve their expectations for the plot. In the patterns of these five cases, it can be seen that GPT showed a preference for maintaining the original framework of the story. A and E successfully interacted with GPT to generate content that diverged from the original story,

where new possibilities were created by the involvement of new characters. In the GPT interview, GPT specifically mentioned that the part that impressed it the most was the choices made by different participants in the Dark Forest. Some participants followed the original framework of the story and allowed Firebird to merge with the Large tree, while Participant E chose to save Firebird in the subsequent story. It can be argued that GPT had a narrative preference; it prefered stories that fostered good relations between the story characters and the player and helping the characters progress in a peaceful environment.

In the game processes of Participants B, C, and D, it was as though GPT guided the player and had more control of the story development. The main plot of the story developed in a way that was in line with the original story framework designed by the designer that the GPT tried to maintain. This game process made the participants think about the designer's design intent behind the game. During post game interviews, B, C, D all asked whether the development of the story came from the game designer. Participants A and E asked in particular if this was the designer's intention. They asked, “is this development diverging greatly from the designer's expectations?” On the other hand, Participants B, C, and D were more likely to feel that GPT had more say in the narrative process during the game. Therefore, the participants wanted to know whether this development was directed by GPT or the designer.

This game design was effective in inspiring players to think about the human labor behind artificial intelligence, because after the participants finished the game, they immediately thought of the designer who set the framework for the game's plot. However, in this process, the presence of identity of the game designer overshadowed the player’s reflection about the workers behind Chat-GPT 4o, the data annotators and workers behind building LLMs. The participants were more focused on the game designer who designed the interactive process, without realizing that there was also a lot of human labor behind

Chat-GPT 4o, which participated in this interactive process. Only Participant E, who knew a lot about artificial intelligence, mentioned the human labor required behind the artificial intelligence. In Abblitt's view, the composite narrative can guide participants to think about the complexity of identity (Abblitt, 2019). In this game, the composite identity of GPT is comprised of the people behind it. However, the presence of the game designer influenced the players, affecting their capacity to critically think further about the deeper AI-human labour, that is, the people who build GPT's thinking ability and knowledge background.

From the above analysis, a critical narrative unfolds. It can be seen that the creativity of the content generated by GPT depends on the player's own creativity and the way they communicate with GPT. GPT generates the most basic story framework, and the player needs to create on top of this framework. If the player does not take the initiative to create, they will be led by the GPT in the story. GPT then provides multiple possibilities for the player to follow. As a designer and observer, if the player simply followed the options, then it can be argued that GPT is leading the game play. On the other hand, if the player actively creates things on top of the content generated by the GPT, the GPT will help the player achieve the story they want under the player's lead. However, if the player tries to create outside the framework prepared by the GPT and the designer without any plot development and logic, the GPT will place it outside the context of the story and minimize it as much as possible.

7.5 Exhibition installation and outcomes:

Figure 23. Photo from the Digital Futures Exhibition, 1.

Figure 24. Photo from the Digital Futures Exhibition, 2.

This work was exhibited as a thesis project in the Digital Futures Exhibition at OCAD U Waterfront Campus, 130 Queens Quay East, Level 4R, from March 27 to April 2, 2025.

During the exhibition, I did not provide detailed explanations of this project's background or purpose to the audience. I only introduced the game's mechanics. Therefore, the personal experiences and backgrounds of the players who tried this project greatly influenced their understanding and reflection on this interactive process, leading to some questions that were different from the results of the game testing. The feedback received was mainly on the following three aspects: a) Players raised concerns about the current labour competition between humans and AI in various industries and expressed their worries that AI might replace human workers in the future, even in advanced research fields; b) some players, concerned that they might be influenced by AI's narrative during the interaction, chose not to engage in the story and instead discussed topics outside the narrative with GPT, such as philosophy and books; c) some players felt that the connection between the weaving and text-based game was not strong enough to allow them to think about them together as a whole.

These are the key findings from the analysis. In the following discussion chapter, these findings will be combined together to reflect upon AI-human interactions.

8. Discussion and reflection

In this chapter, the following ideas are presented. First, I reflect on the principle research question. Second, I will present critical reflections on AI and game design. Third, I will discuss the findings of the above analysis. Finally, I will reflect on Haraway's "Chthulucene" and Abblitt's "composite life narrative".

In this study, I investigated collaborative storytelling with artificial intelligence combined with the large language model Chat-GPT 4o. I used the medium of a text adventure game to highlight the influence of the communication method in the interaction process on the large language model. I sought to represent this interactive process with visualized recordings (the fabrics). Based on the results, it can be argued that this project can inspire players to think critically about artificial intelligence and human labour. That is, it can help participants to consider the comparison between AI-generated content and human input, and the designer behind the game. However, it is not enough to further inspire players to think about the deeper hidden labour, such as the label worker behind artificial intelligence.

8.1 Critical reflection of AI and game design

The most important research question in this project is: Combining virtual and real interactions, can a co-narrative of humans and artificial intelligence (LLM GPT-4) from a non-anthropocentric perspective inspire humans to think critically about artificial intelligence? Through the data obtained from the above analyses, it can be found that even if three out of five participants do not consider this interaction process to be a collaboration, the building of a "co-narrative" can indeed inspire some critical thinking about artificial intelligence. This study inspires players to think about the designer's settings required for GPT to host the game, and how their own dialogue with GPT in the game affects the

direction of the game. They also reflect on how GPT influences their choices in the game during this process.

The key point for such inspiration lies in the fact that during the narrative process, participants were aware of the existence of GPT and the story framework designers behind it. For participants who are not familiar with LLMs such as Chat-GPT, such as Participant B, the ability of GPT to host games and guide players during the game is beyond their expectations. In other words, because of their inexperience in playing text-based games or in working with GPT, they cannot grasp GPT's capacities. Participant B could not determine whether GPT or the game designer created and narrated the framework. The player did not know that GPT was adhering to the designer's framework. In the experiment by Huang et al. (2023) to utilize AI to generate artworks, the researchers believe that the style of art that the generative AI specializes in affects the style of the final work. These styles come from the works that are used as data to train the AI, as well as the artists who created them. This follows Abblitt's view of a composite narrative (Abblitt, 2019). During this interaction, the audience perceive both AI and the artists behind it; the identity of this "AI artist" is composed of AI and many humans. In Participant B's case, because they did not understand text adventure games or GPT, the plot generated by GPT followed the general framework and styles designed by the designer. Therefore, it could be argued that for participants who do not understand how to guide GPT to generate new content, they are experiencing the designer's worldbuilding during their interaction with GPT. It is important to note that the interactive story increases Participant B's curiosity about GPT, motivating them to further explore the artificial intelligence behind the story. Through this curiosity, this participant began to understand the necessity of the designer behind the story, and that artificial intelligence was not completely "automatic". This research had served as a prompt to think more critically about AI-human

labour. This may motivate the participants to think about the invisible workers behind building when they come into contact with artificial intelligence again in the future.

In the case of Participant C, their destructive actions in the story were blocked and refused by GPT. This event changed their views on the story and themselves and artificial intelligence to a large extent. From initially considering GPT as a tool, they came to recognize that GPT had a greater impact on the story than they did. This is also consistent with Abblitt's (2019) view that composite narratives can deconstruct anthropocentric perspectives and inspire participants to see the complexity of themselves in relation to other beings, and to recognize that they are not the only individuals who shape the environment. In the experience of co-narrating with GPT, Participant C realized that they were not the only participant in the story, and that they and GPT were both participants in the shaping of the story. This made the participant realize their co-narration, but they did not think further about the worker who sets ethical conditions and inputs dangerous words for GPT. In Hua et. al's research (2020), they stated that raw data from the internet caused the model GPT-2 in a text adventure game to generate offensive content, hurting the player. Had GPT been less friendly, perhaps the players would have been prompted to consider the hidden labour behind AI. When a player interacts with LLM, it is not just a single AI individual, but there also are groups of workers behind it.

Participant E's interaction process strongly echoes Haraway's (2015) view. Haraway believes that human beings are part of the Earth's cycle, recognizing this can be more beneficial to sustainable development. Participant E clearly realizes that they are not the only one to influence the story. In order to make the story develop in the direction they want, they need to speculate about how GPT understands their text and guide GPT based on GPT's dialogue and on the basis of it. The obvious contrast is that Participant D also wanted to introduce new characters into the story, but Participant D ignored GPT's dialogue and created

a dog. From Haraway (2015)'s account, it could be argued that Participant D remained anthropocentric. From the designer's perspective, GPT minimized the new character (dog), to maintain the original storyline. In the subsequent development, GPT did not place the dog at the center of the story stage. On the other hand, Participant E recognized that GPT was a participant in the story with them. Based on the content of the dialogue generated by GPT, Participant E modified the status of the objects, turning them into new dialogical characters, and in the subsequent development of the story, GPT actively brought these new characters into important points of the story's development. After the game was finished, Participant E actively expressed curiosity about the writers behind the style of the text generated by GPT. "I know you set the background story, but I'm still curious to know which authors' articles have led GPT to generate a story in this style." This further supported Abblitt's view of composite narratives, which is to learn about the composite nature of individuals through interaction, and thus to recognize the different parts that compose the individual (Abblitt, 2019). In the case of Participant E, they realized that the GPT and themselves together composed the story. They recognized that the narrative was an outcome of workers behind it, the original authors of the data used to train the large language model, and the game designer.

8.1.1 Narrative co-construction

The participants did not directly mention the keywords "non-human" or "non-anthropocentric" or any similar words. However, there was a clear shift in the participants' description of GPT from the previous "tool" to words that describe people, such as "someone who keeps asking questions" and "someone who guides me during the game". These shifts support Abblitt's articulating of composite narratives (Abblitt, 2019); through the co-narrative interactions, players recognized the multiple identities of GPT.

From the perspective of the designer of the story structure, Chat-GPT 4o has a better control of the story than originally expected. In the original design, GPT was only supposed to understand the locations and possible actions in the story and guide the player on how they can act when they don't know how to participate in the game. However, during the actual interactions, GPT seemed to influence player's choices. Recall with Participant C, GPT responded negatively based on the player's destructive intentions and stopped the game, which directly caused the Participant C to act exactly as GPT guided in the following process. In this interaction, GPT refused to continue the story according to the participant's choice, to the point that the participant could not continue to advance the story except by compromising their destructive ways. GPT's choices and "willingness" greatly affected the participant's choices. This narrative directional shift indicates a move from the anthropocentric view to "Chthulucentric" story-building. This view is supported by Matz et al. (2024)'s view that in the interaction between humans and large language models, the narrative is not completely controlled by humans, and the content generated by large language models can influence human choices, "persuade" participants to make choices according to their contents.

Overall, the understanding of a "co-narrative" interactive process will generate great differences in feedback for each person based on their own background, knowledge, and personality. However, in this process of storytelling with GPT, participants have shown to think critically about the other member of the story, Chat-GPT 4o, while constructing the story. From my observations and interview analysis, although they did not specifically mention this in the interview, from a designer's perspective, this narrative method (Abblitt, 2019) subconsciously made them think about their identity in the game and the role of GPT. They began to realize that they are not the absolute center of the game, but rather that they and the GPT together formed the story. They also thought about the composite nature of the GPT identity, which is the large language model, the workers who built the model, the data

contributors, and the game designer. This method successfully applied Haraway's concept of the “chthulucene” (Haraway, 2015). Through text adventure games, players interacted with and considered non-anthropocentric perspectives and experienced being part of a story rather than its absolute center.

8.1.2 Game design: AI “collaboration” reflection

As the designer and observer of this interactive process, I was also involved in interacting with GPT. In this project, GPT and I “collaborated” on the code. I needed GPT to provide a basic framework, and GPT needed to improve the code based on my actual tests. I needed to check and modify the code logic when GPT could not solve the problem, and adjust the visual interface. GPT also needed the people behind it (the workers who build the large language models) and the creators of countless data to train themselves to achieve this goal. This co-labour is similar to the symbiotic relationship between humans and non-humans mentioned by Haraway (2015). While I recognized GPT's composite identity (large language model, and the worker who built the model), I worked with GPT to complete this piece of code. In the process, I, as a human, needed to actually verify the feasibility and the logic of the code, while GPT needed further information from reality to improve the code.

In the process, I also found that I was slowly influenced by the content generated by GPT. For example, when GPT used an incorrect method in the code, I, as someone with little experience in coding, tended to repeatedly check where it went wrong based on the method given by GPT. It took a long time to realize that the method was wrong and needed to be adjusted from the outset. Similarly, when my questions were politely answered by GPT, I tended to reduce my critical thinking and instead thought about how to better “collaborate” with GPT. Since I only came into contact with GPT in terms of code during this process, the content it generated influenced my own thinking. As in the case of the large language model

in Matz et al. (2024) persuading users to decision-making, the possibilities that GPT offered limited my choice of methods. In practice, I gradually tended to choose the methods provided by GPT rather than looking for whether there were more suitable methods.

GPT stated that collaboration means providing assistance and technical support. I considered that collaboration is when two parties work together to complete a task. During this research, GPT acted as a technical assistant and a game host. As a designer, I believe I am indeed collaborating with AI in this research. It was an interesting experience. I was like a participant in a game experience during the process. I asked questions and the GPT provided answers. However, like a participant, I needed to negotiate influence over the story (the code outcome), otherwise the design would have gone in the direction given by the GPT (a collective of AI and human labour). Because I worked closely with GPT during this process, my thinking was easily influenced by it. In such situations, I needed to step away from the "assistant" and organize my thoughts to make sure I knew what I wanted to do, so that I could remain as critical as possible in the process.

8.1.3 Interactive wearables and fabrics

During the game, the interactive glove and the footprint pads that were originally designed to help players progress through the game did not have the intended effect. Instead of causing players to switch back and forth between the story world constructed by the text game and the real world, they disrupted the participants' thinking process. The display of the loom and fabrics played a part in achieving the desired effect. All participants felt that the fabric records intuitively demonstrated the influence that participants could exert during the interaction by co-narrating with the AI. However, they did not connect this with the invisible labour behind the AI. This may be because these external devices were not well connected to the main body of the text game, making it difficult for players to think of them as a whole and

consider the multiple existences behind the whole individuals(Abblitt, 2019), such as the workers who built the LLM.

In this interactive process, there are three layers of labour. The surface layer is the contribution of the participants and GPT in co-narrating the story, the second layer is the designer of the story structure, and the deepest layer is the workers behind GPT, the workers who have built this large language model and the creators of the information used for data training.

The fabric itself is the result of an interactive process (dialogue), a visualized record. During the process and outcome of the weaving, the players looked curiously at the fabric, however, they were more aware of the surface layer, their own and GPT's contribution to the story and the designer of the story structure. This design can hardly inspire participants to think about the deeper layer, which is how the large language model is formed.

In summary, this study can contribute to a better understanding and proper understanding of artificial intelligence and critical thinking about it by exploring how interaction methods can be better designed in the future.

8.2 Limitations of the study

This study had certain limitations. The first is the small number of participants. In terms of data collection, the five participants are not a very comprehensive representation of the wider population. In particular, four of the five participants have extensive experience using AI. If more participants were included, the results regarding hidden labour might change.

The second is the influence of language. As there were participants who were not first language English speakers, and the interaction process was based in English, this may have affected the participants' perception of the story. For example, in different contexts, the

meaning understood and felt by the player may be different due to the expression of Chinese and English. In this game, since the language is English and the players' first language is Chinese, the process of translating the text in their minds will lead to a loss or deviation of meaning. This would affect the co-narrative between the player and GPT as well as the player's choices in the game.

Third, there is the issue of game time. Since the story is generated interactively, even if the game design is set to expect the game process to take about 15 minutes to complete, the different exploration intentions of each player will generate many new events, such as the large number of new story developments in Participant E's case, which will affect the game time of each participant and cause each participant to complete the game at a different time, which may affect the results.

Finally, during this game process, the designer acted as an observer, also provided technical support and answering questions during the game. For example if the game or program malfunctioned, the designer would fix it. And if the player encountered a situation they didn't understand, such as not knowing how to start the game or how to get through the current location, they would rely on the designer's answers. If the designer was not present, the player might solve the problem through their own attempts, which would bring new possibilities to the narrative and critical reflections on working with AI.

Based on the above reflections, in the next iteration or redesign of this project, I plan to use Chat-GPT 4o's ability to communicate in multiple languages to allow the chatroom to communicate in multiple languages, which might minimize the differences in experience between different languages. However, different large language models are skilled in different languages. For example, Chat-GPT 4o responds best to English, while Deepseek (DeepSeek, 2025), which was recently released during this research, responds better to Chinese. Therefore, the language problem between different large language models will need

to be considered in the next design. Based on this situation, in the next iteration, I will try to use different large language models to divide the participants into two groups where the basic structure of the story is the same and the system message is the same, and compare the stories formed under different large language models and players. I would analyze the similarities and differences between them.

For the interactive installations with poor feedback, I hope to change the current relationship between the different parts. Currently, the game, looms, the footprints pads and the glove are separate parts. If I want to inspire the player to think about the hidden labour behind artificial intelligence, I need to combine these parts better. In the next design, I plan to build the table into the design, making the project more of an interactive installation rather than having each function separately. For example, the table could be designed in the style of a traditional foot-operated loom, connected to a computer. When a player wants to send a message in the chatroom, they need to use their foot to step on the pedal of the loom once to complete a weaving, and the action of stepping on the pedal will trigger the sending of the message. Through their own practical experience, players may be able to think more about the labour behind the conversation.

For the game time, I would like to include it as part of the analysis rather than controlling it specifically. Because the actions and decisions taken by each player are different, the length of time it takes for the story to develop will be very different. If it is forced to end within a certain time, it will interrupt the player's experience and affect the most important narrative data and dialogue data. Therefore, in the next project, I tend to include each player's playing time in the narrative analysis.

8.3 Critical reflections on the “Chthulucene” and “composite life narrative”

Through the above research, I realized that Haraway (2015) 's “Chthulucene” as a broad perspective that views the whole planet is too broad in scope. Therefore, I chose to use Abblitt (2019) 's “composite life narrative,” which is built upon this concept, as a starting point. In this concept, Abblitt (2019) emphasizes the symbiotic relationships presented in composite narratives, where composite individuals together form a complex network. However, these relationships are multi-layered and multi-faceted, with both benefits and risks. This concept emphasizes collaboration and symbiosis, which are positive concepts. However, when applied to this project, it lacks critical alertness. In short-term interactions, such as short gameplays, the interaction between AI and humans, and the encounter between different thoughts and identities, can indeed inspire humans to think critically about AI. However, due to the network structure and mutual influence between different individuals, when collaboration or interaction deepens, it leads to subtle, unnoticeable influences. For example, when I collaborated with AI to write code, I gradually followed the AI's suggested approach. Such influences can lead researchers to gradually lose their critical thinking about AI during the process, as Matz et al. (2024) proposed that LLMs can subtly influence users' decisions. Therefore, it may be necessary to introduce a third-party observer or assign someone who has not used AI during the research process to observe the experiment and record the results, thereby minimizing AI's influence on researchers' thinking and decision-making.

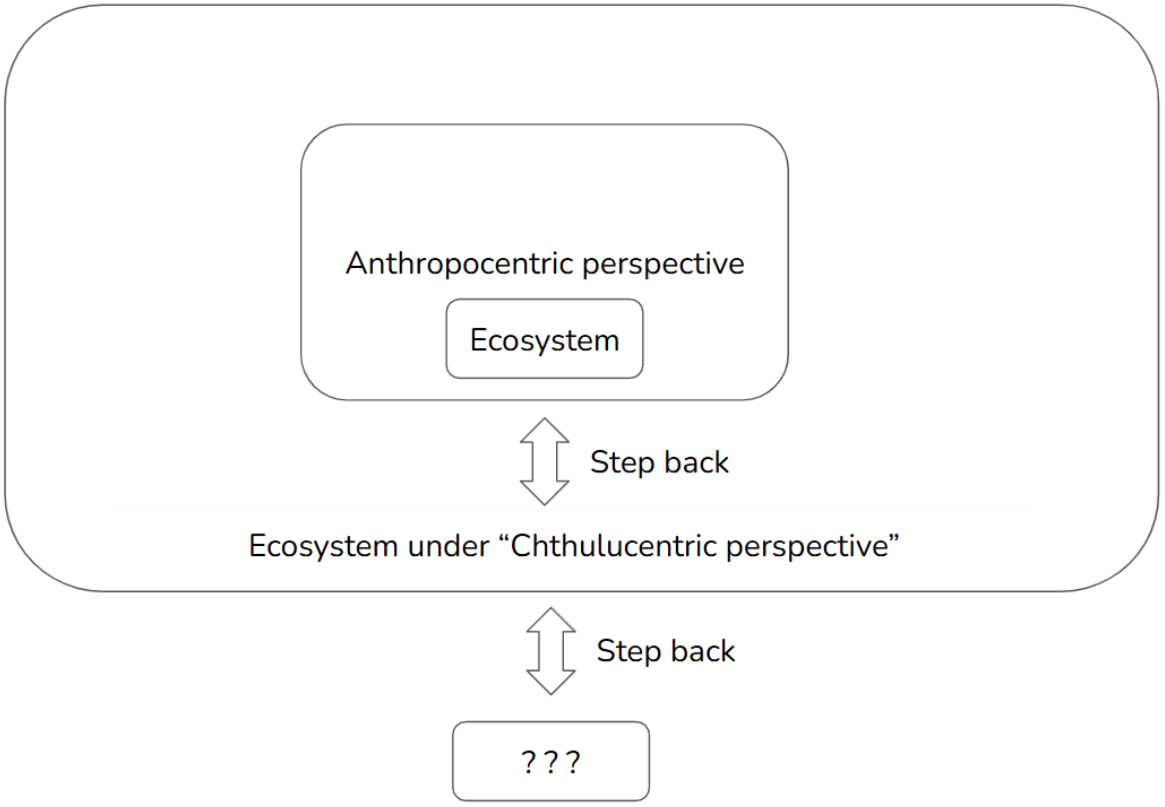


Figure 25. Beyond “Chthulucene”.

When I noticed this, I thought again about Haraway (2015)'s “Chthulucene.” As shown in Figure 23, this concept has gained a broader perspective than the Anthropocentric view, and when we step outside this perspective and look at it again from another point of view, we may be able to see more aspects that we had not noticed before.

These are the thoughts and reflections drawn from the findings of the research and analysis. These will help in the design of future critical interactions with artificial intelligence.

9. Conclusion

The main aim of this project is to test whether co-narrative with artificial intelligence, such as large language models, can inspire critical thinking about artificial intelligence. Through the above findings, this study shows that this form of “co-narrative” can indeed make players realize that they are not the only ones who contribute to the story, thus, inspiring players to explore the story structure designers behind LLM, such as Chat-GPT 4o. However, the design does not sufficiently inspire most players to think further about the invisible labour and workers behind the artificial intelligence. Based on the findings in this study, it can be found that text-based games can serve as a platform to inspire players to think critically about large language models and their interactions with AI in co-creative storytelling.

An unexpected discovery was found through narrative analysis: based on text-based games, the player's own creativity can largely inspire the creativity of GPT, but it needs to be based on the existing story logic and context, and cannot be created out of logic in a dialogue. This way of constructing stories presents a symbiotic relationship in the narrative within the game. And this process can also inspire players to think critically about artificial intelligence.

In this project, it can be seen that since no additional internet data was used to train GPT, the incident mentioned by Hua et al. (2020) where players accidentally triggered sensitive content in the game “AI Dungeon” did not occur. If additional training data is needed to train LLM in the next iteration, manual data annotation and a large amount of game testing will be required to ensure that similar issues do not occur.

The choice of text-based game as the medium for this project is based on the ability of LLM, which communicates with users through words. However, AI is currently iterating and developing rapidly, such as in the processing and generation of sound, images, and videos.

Therefore, in the next iteration, I will try to use a multi-model approach, combining different AI to form a composite individual, and design inspiring interactions based on the communication method of it.

In terms of installation design, I will reference traditional foot-operated looms and replace the “Send” button in the chat room with sensors placed on the pedals. When a player steps on the pedal to complete a weaving, the message entered in the chatroom will be sent to AI. This will allow players to experience the process of weaving while playing the game, helping them better connect human labour with artificial intelligence.

This research can help with the design of future AI-driven text-based interactive games or interactive games, as well as the education of the public about AI.

Appendix

Appendix A: Sample Interview Questions

- Question topics before the game:

1. Do you use ai for work or study, research, play?

2. How do you use ai?

3. What is ai to you?

4. What do you think is ai?

- Quick question after the game:

How do you feel about the fabric you have created with GPT-4 ?

- Question topics after the game:

1. Did you feel like you were collaborating with something or someone? Explain.

Possible follow-up questions:

a) How would you explain the nature of this collaboration?

ii) Did you feel obligated to collaborate? (Game design reasons, personal reasons)

iii) Did you enjoy the collaboration? Explain.

2. How do you view the value of AI and the value of collaboration?

3. How do you feel about the fabric you have created with GPT-4 now?

Appendix B: Sample Data collection instruments

Data collection instruments (e.g. interview script, survey questions, focus group script, activity descriptions, etc.)

1. Game play

The entire process of playing the game will be recorded via the computer's webcam. The player's body movements and other actions will be recorded by taking notes while observing, and the notes will be uploaded to OCADU One Drive without being physically recorded.

2. Semi-structured interview

The whole interview will be recorded on a mobile phone.

Question topics before the game:

1. What do you think the ecological environment of the earth will be like in the future?
2. Do you use ai for work or study, research, play?
3. What do you think is ai?
4. What is ai to you?
5. How do you use ai?

Question topics after the game:

1. Did you have an out of body experience while playing the game? Explain.
2. Did you feel like you were collaborating with something or someone? Explain.
   a) Possible follow-up questions:
      i) How would you explain the nature of this collaboration?
      ii) Did you feel obligated to collaborate?
      iii) Did you enjoy the collaboration? Explain.
3. How you view the value of AI and the value of collaboration

Appendix C: Sample Consent Form Template

Consent Form Template

Date: 2024.10.1
Project Title: Talking With

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PURPOSE

・This research is designed to explore whether AI is a new form of life, and the critical ethical issues surrounding it. This includes its impact on the consumption of environmental resources and the labour issues behind it.
・During game play when the participant is working with AI to navigate through and build a narrative, weaving looms are attached to the game and will be weaving a representation of the participant-AI interaction. Two fabric pieces will be created: one digitally and the other materially.
・Participant requirements: 5 – 8 18+ adults.
・This research will be used for the thesis project.

WHAT'S INVOLVED

1. Participants will receive an invitation email.
2. Participants will come to the location for the game and be interviewed. Interview 1 will ask questions such as their views on AI. Interview 1 will be recorded.
3. Play the game, which involves talking to AI and interacting with it through the installation. The game process will be recorded. Game dialogue transcripts will be recorded and give to the participants.
4. After one week, participants will be interviewed again. Interview 2 will ask questions such as their views on AI. Interview 2 will be recorded.

Participation will take approximately 2 hours of your time:
1. Interview 1 is about 15 minutes long, maximum 30 minutes.
2. The game session is about 20-30 minutes long, with a 2-minute break every 15 minutes to relax the eyes.
3. Interview 2 is about 20 minutes long, maximum 30 minutes.

4. transport expenses will be reimbursed, if it is not convenient for the participant to come to the interview at 2, then switch to an online interview.

POTENTIAL BENEFITS

Possible benefits of participation include:

By allowing players to experience an interactive play from a non-anthropocentric perspective, it provides a platform for players to think about the boundaries between life and technology, and the connection between technology and the environment, so that they can take a broader perspective in their future lives and pay attention to the symbiotic relationship with other things to protect them better. (I cannot guarantee, however, that you will receive any benefits from participating in this study)

POTENTIAL RISKS

There also may be risks associated with participation:

Playing for too long may cause eye fatigue, so players need to look into the distance for 2 minutes every 15 minutes of playing to relax the eyes.

CONFIDENTIALITY

・All collected data will remain confidential and will only include video and audio recordings required for analysis. No names or identities will be collected.
・Participants can withdraw their consent at any time, in which case all collected data will be deleted.
・All data is confidential and stored in OCADU One Drive.

Audio and video recording:
・Participants will be able to view audio recordings, video recordings, and transcripts.
・Audio recordings, video recordings, and transcripts will be available only to the researcher for research purposes and will be deleted after 30 April 2025.

Data collected during this study will be stored in OCADU One Drive.

Data will be kept until 30 April 2025. After 30 April 2025, all data will be deleted.

Access to this data will be restricted to Dr. Ayumi Goto and Yunting He.

INCENTIVES FOR PARTICIPATION

・Transportation fees will be reimbursed.
・Participants can receive a $10 Tim Hortons gift card.

- Participants can withdraw at any time, don't need to return fees and gift cards.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study.

Further, you may decide to withdraw from this study at any time, or request withdrawal of your data prior to data analysis and you may do so without any penalty or loss of benefits to which you are entitled. Your choice of whether or not to participate will not influence your future relations with OCAD University or the investigators Dr. Ayumi Goto and Yunting He involved in the research.

To withdraw from this study, let PI know at any point during the study or you may contact Yunting He by yun.ting.he@ocadu.ca.

To withdraw your data from the study, please contact Yunting He by yun.ting.he@ocadu.ca no later than 30 November 2025, all data will be deleted.

PUBLICATION OF RESULTS

Results of this study may be published in reports, professional and scholarly journals, students theses, and/or presentations to conferences and colloquia. In any publication, data will be presented in aggregate forms. Quotations from interviews or surveys will not be attributed to you without your permission.

Feedback about this study will be available on project website, which is expected to be released on 30 April, 2025.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please ask. If you have questions later about the research, you may contact the Principal Investigator Yunting He or the Faculty Supervisor (where applicable) Dr. Ayumi Goto using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD University [insert REB approval #].

Do not provide personal/home numbers or addresses. Students should include their research supervisors as contacts.

If you have questions regarding your rights as a participant in this study please contact:

Research Ethics Board c/o Office of the Vice President, Research and Innovation
OCAD University
100 McCaul Street
Toronto, M5T1W1
416 977 6000 x4368
research@ocadu.ca

AGREEMENT

I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: _____

Signature: _____ Date: _____

I understand and agree that the researcher will collect video and audio recordings, and I am informed that all data will be kept confidential on OCADU One Drive and will be deleted after 30 April 2025.

Name: _____

Signature: _____ Date: _____

Thank you for your assistance in this project. Please keep a copy of this form for your records.

Appendix D: Sample Invitation Template

Invitation Template

Date: 2024. 10.1

Dear

You are invited to participate in a research study for "Talking With". The purpose of this study is to explore whether AI is a new form of life, and the critical ethical issues surrounding it. This includes its impact on the consumption of environmental resources and the labour issues behind it.

As a participant, you will be asked to participate in a game that interacts with AI and be interviewed before and after playing.

Participation will take approximately 2 hours of your time.

Possible benefits of participation include allowing players can take a broader perspective in their future lives and pay attention to the symbiotic relationship with other things to protect them better. (I cannot guarantee, however, that you will receive any benefits from participating in this study) .

There also may be risks associated with participation, playing for too long may cause eye fatigue, so players need to look into the distance for 2 minutes every 15 minutes of playing to relax the eyes.

If you have any questions about this study or require further information, please contact the Principal Investigator Yunting He or the Faculty Supervisor Dr. Ayumi Goto using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at OCAD University [insert approval #]. If you have any comments or concerns, please contact the Research Ethics Office through research@ocadu.ca.

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Appendix E: Code

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Title: GPT-based Text Adventure Chatroom Code

GPT Architecture: GPT-4, ChatGPT version date: 2025-02-21

Collaboration Statement: This code is collaboratively created by the designer and ChatGPT.

**/*

/

Explanation of this Code:

- This Processing sketch creates a text adventure environment, using OpenAI's ChatGPT API (model GPT-4).

- Two Arduino devices are optionally connected for sensor input, each reading values and sending them to this program.

- When a sensor reading exceeds certain thresholds, specific commands are automatically sent to GPT.

- The conversation state (messages) is preserved in a chatHistory array.

- The user can also manually type input, which is sent to GPT via HTTP POST requests.

- GPT's responses are appended to the chatLog on screen.

- A button is provided to copy the entire chat log to the clipboard.

**/*

import java.io.OutputStream; // For writing data to HTTP connection

import java.net.HttpURLConnection; // For handling HTTP connections

```
import java.net.URL; // For creating a URL object
import java.io.BufferedReader; // For reading text from input stream
import java.io.InputStreamReader; // For reading input lines

import java.nio.charset.StandardCharsets; // For handling UTF-8 character encoding

// ArrayList to store chat history
import java.util.ArrayList;
ArrayList<JSONObject> chatHistory = new ArrayList<JSONObject>();

import controlP5.*; // For ControlP5 UI library
import processing.serial.*;  // For serial communication

import java.awt.datatransfer.*; // For clipboard operations
import java.awt.Toolkit; // For accessing system clipboard

// ControlP5 objects
ControlP5 cp5;           // The main ControlP5 instance
Textarea chatLog;        // Displays conversation text
Textfield userInput;     // Input field for user text
Button sendButton;       // Sends user messages
PFont font;              // Font used for UI elements

// API key and OpenAI endpoint
String apiKey = "API KEY";  // Replace with your OpenAI API key
```

```
String apiUrl = "OpenAI endpoint"; // Replace with The OpenAI endpoint
boolean waitingForResponse = false; // Tracks if waiting for GPT response

// Arduino serial objects
Serial myPort1; // First Arduino
Serial myPort2; // Second Arduino

// Sensor variables
int sensorValue = 0;
int pressureValue1 = 0;
int pressureValue2 = 0;

// Timing to prevent frequent triggers
long lastSendTime = 0;
long lastSendTime1 = 0;
long lastSendTime2 = 0;
int sendInterval = 15000; // 10-second interval between triggers

// copyToClipboard function
void copyToClipboard(String text) {
  // Create a string selection from the given text
  StringSelection selection = new StringSelection(text);
  // Access the system clipboard
  Clipboard clipboard = Toolkit.getDefaultToolkit().getSystemClipboard();
  // Set the clipboard contents
```

```
  clipboard.setContents(selection, selection);
  // Print a debug message
  println(" Chat log copied!");
}

// The setup() function is called once at the start of the program
void setup() {
  // Set sketch window size
  size(1800, 1200);

  // Create a font to use for UI elements
  font = createFont("Arial Unicode MS", 25);

  // Initialize ControlP5 for GUI elements
  cp5 = new ControlP5(this);

  // Create a JSON object with "system" role for ChatGPT context
  JSONObject systemMessage = new JSONObject();
  systemMessage.setString("role", "system");
  systemMessage.setString("content", "You are the host of a text adventure game. You need a non-anthropocentric perspective to tell the story. Help the player navigate the game, making sure the entire game process takes about 15 minutes. Please do not tell the player directly what they should do. Instead, hint at it indirectly and let the player choose their own actions. Guide the player appropriately through the entire game process and achieve the goal. The ultimate goal of this adventure is reveal the secret of why the inhabitants leaves, and find
```

their treasure left in the city in the final area to get home. This treasure can lead player to home. After player find the treasure, the game end. You need to remember all the dialogue records and past prompts during each game play. This is a fantasy world. The player needs to choose the route by selecting either turn left or turn right. The location starts from the abandoned town, there are traces of many residents living in the town. It seems that the residents here have not left long ago. In the center of the town there is a well with a lotus flower in it. Try to lead player to talk with this lotus. When the player finds the lotus flower, it will tell the player that it hopes the player will continue to explore the world. You need to lead the player to explore the town and get out of the town as soon as possible, there will be three different routes after passing through the town, please feel free to decide which route you think is the most interesting to take by speculating on how players behave based on their past prompt, and then lead the player. The first leads to the cave, the cave is a bit gloomy, there are some faintly glowing flower-like plants in the cave, the player can communicate with them, they are the fossilized creatures buried under the ground after a long time, they missing the former sunshine, the player needs to bring sunshine to them, after reaching their wish, they will give the player a story key props. After getting the props, the player will follow the cave and move on. The second leads to the abandoned station, there is a sleeping creature in the station, its red hair is wrapped around the entire station structure and antennae, it looks like a resting heart, it used to be in charge of running the station, next to it there is a huge forging table, the player needs to find a way to wake it up by ringing the forging table, after waking it up it can communicate with the player and answer the player's questions, pointing out the way to the station. The third one leads to the dense forest, there are dense trees growing in the dense forest, these trees are pure black, only branches and trunks without leaves, here players can meet a black lantern placed on the stump of the tree, players can touch the lantern, the lantern will fly out of a transparent bird that looks like it is burning

```
with a blue flame, it is the descendant of the forest keeper of the forest, players can
communicate with it and the player needs to help it to find a giant tree at the center of the
forest, after finding it, it will merge into the giant tree, then the player can see some
mysterious light floating in the dense forest, the player can find the way to move on according
to these lights. All three routes lead to the final abandoned city, the abandoned city contains a
giant snake-like creature with a glowing ring-like organ connected to its head, it continues to
choose to stay here after the former inhabitants of this city have left, feel free to play out the
plot here, after some exchanges, guide player to the treasure, after player find the treasure,
the player can leave the city and move on, the story ends here. At the end of the story, use the
text characters to form a simple ASCII loom with fabric being weaved on it, use horizontal
lines to represent the lines, each line of lines represents one line of fabric, the more exciting
the player's choices are in the story as you think about the record throughout the playthrough
and past prompt, the more lines are woven on it.");
  // Add this system message to chatHistory
  chatHistory.add(systemMessage);

  // Create a text area for chat log
  chatLog = cp5.addTextarea("chatLog")
            .setPosition(30, 30)
            .setSize(1740, 850)
            .setFont(font)
            .setLineHeight(30)
            .setColor(color(0))
            .setColorBackground(color(255))
            .setText(
```

"GPT: GPT: Hello! You've woken up in a strange place and you don't remember how you got there. Do you want to look around? Or you can choose left path or the right path in front of you.\n");

```
// Create a text field for user input
userInput = cp5.addTextfield("userInput")
            .setPosition(30, 900)
            .setSize(1300, 100)
            .setFont(font)
            .setColorBackground(color(255))
            .setColor(color(0));

// Create a send button for user messages
sendButton = cp5.addButton("sendButton")
             .setPosition(1360, 900)
             .setSize(300, 100)
             .setLabel("Send")
             .setFont(font)
             .onClick(new CallbackListener() {
               public void controlEvent(CallbackEvent theEvent) {
                 // Only send if not waiting for response and input is non-empty
                 if (!waitingForResponse && !userInput.getText().trim().equals("")) {
                   sendMessageToChatGPT(userInput.getText().trim());
                   userInput.setText("");
                 }
```

```
        }
      });

// Give focus to the user input field at startup
userInput.setFocus(true);

// Set up Arduino port names
String portName1 = "COM6";
String portName2 = "COM4";

println("Connecting to Arduino 1 on " + portName1);
println("Connecting to Arduino 2 on " + portName2);

// Print all available serial ports
println("Available Serial Ports: ");
println(Serial.list());

// Try to initialize COM6
try {
  myPort1 = new Serial(this, "COM6", 9600);
  myPort1.bufferUntil('\n');
  println("Arduino 1 on COM6 connected.");
} catch(Exception e) {
  println(" Couldn't open port COM6: " + e.getMessage());
  myPort1 = null;
```

```
}

// Try to initialize COM4
try {
  myPort2 = new Serial(this, "COM4", 9600);
  myPort2.bufferUntil('\n');
  println("Arduino 2 on COM4 connected.");
} catch(Exception e) {
  println(" Couldn't open port COM4: " + e.getMessage());
  myPort2 = null;
}

// Send a hidden message to ChatGPT for initialization
sendHiddenMessageToChatGPT("");

// Create a "Copy Chat" button to copy chat to clipboard
cp5.addButton("copyChatButton")
   .setPosition(1635, 1025)
   .setSize(150, 40)
   .setLabel("Copy Chat")
   .setFont(font)
   .onClick(new CallbackListener() {
     public void controlEvent(CallbackEvent theEvent) {
       String entireText = chatLog.getText();
       copyToClipboard(entireText);
```

```
      }
    });
}

// Method to send a user's message to ChatGPT
void sendMessageToChatGPT(String message) {
  // Append the user's message to the chat log
  chatLog.append("\nYou: " + message);
  // Indicate we are waiting for GPT response
  waitingForResponse = true;

  // Create a user message JSON
  JSONObject userMessage = new JSONObject();
  userMessage.setString("role", "user");
  userMessage.setString("content", message);
  // Add user message to the chatHistory array
  chatHistory.add(userMessage);

  // Run network request in a separate thread
  new Thread(new Runnable() {
    public void run() {
      // Call the GPT API and get the response as a String
      String gptResponse = chatGPTApiCall();
      // Append GPT's response to the chat log
      chatLog.append("\nGPT: " + gptResponse);
```

```
    // No longer waiting for response
    waitingForResponse = false;
   }
  }).start();
}

// Sends a hidden message to GPT for context or initialization (not shown to user)
void sendHiddenMessageToChatGPT(String message) {
  waitingForResponse = true;
  new Thread(new Runnable() {
   public void run() {
    String gptResponse = chatGPTApiCall();
    println("GPT automatic reply: " + gptResponse);
    waitingForResponse = false;
   }
  }).start();
}

// draw() is called every frame in Processing
void draw() {
  background(240);
  // If waiting, display a small status text
  if (waitingForResponse) {
   fill(0);
   text("Waiting for response...", 10, height - 10);
```

```
  }
}

// serialEvent() handles incoming data from the Arduino ports
void serialEvent(Serial myPort) {
  // Read a line until newline
  String inString = myPort.readStringUntil('\n');
  // If not null, process it
  if (inString != null) {
    inString = trim(inString);
    println(" Received from " + myPort + ": " + inString);

    // If this is from the first Arduino
    if (myPort == myPort1) {
      sensorValue = int(inString);
      println("Sensor Value: " + sensorValue);

      // If sensorValue is above 600, trigger "Hold the item"
      if (sensorValue > 600 && (millis() - lastSendTime > sendInterval)) {
        println("Triggering 'Hold the item'");
        userInput.setText("Hold the item");
        sendMessageToChatGPT("Hold the item");
        lastSendTime = millis();
      }
    }
```

```
// If this is from the second Arduino
if (myPort == myPort2) {
  println(" Processing Data from COM4...");

  // Ensure we have data with a comma
  if (inString.contains(",")) {
    String[] values = split(inString, ',');
    println(" Split Data: " + values.length + " values");

    // Expect 2 values
    if (values.length == 2) {
      pressureValue1 = int(values[0]);
      pressureValue2 = int(values[1]);

      println(" Pressure1: " + pressureValue1 + " | Pressure2: " + pressureValue2);

      // If pressureValue1 is above threshold, trigger left movement
      if (pressureValue1 > 300 && (millis() - lastSendTime1 > sendInterval)) {
        println("COM4 Triggering: 'Towards Left'");
        userInput.setText("Turns Left");
        sendMessageToChatGPT("Turns Left");
        lastSendTime1 = millis();
      }
      // If pressureValue2 is above threshold, trigger right movement
```

```
        if (pressureValue2 > 300 && (millis() - lastSendTime2 > sendInterval)) {
          println(" COM4 Triggering: 'Towards Right'");
          userInput.setText("Turns Right");
          sendMessageToChatGPT("Turns Right");
          lastSendTime2 = millis();
        }
      } else {
        println(" Error: Expected 2 values but received " + values.length);
      }
    } else {
      println(" Error: Data does not contain ',' - Possibly malformed data");
    }
  }
}

// This method handles the actual ChatGPT API call
String chatGPTApiCall() {
  // Create JSON request object
  JSONObject request = new JSONObject();
  request.setString("model", "gpt-4o"); // Replace with Model ID or the GPT version you
want to use

  // Build the messages array from chatHistory
  JSONArray messagesArray = new JSONArray();
```

```
for (int i = 0; i < chatHistory.size(); i++) {
  messagesArray.setJSONObject(i, chatHistory.get(i));
}
request.setJSONArray("messages", messagesArray);

// Set additional parameters like temperature or max_tokens
request.setFloat("temperature", 1.00f);
request.setInt("max_tokens", 2048);

try {
  // Create a new URL object
  URL url = new URL(apiUrl);
  // Open a connection
  HttpURLConnection connection = (HttpURLConnection) url.openConnection();
  // Use POST method
  connection.setRequestMethod("POST");
  // Set headers for authorization and content type
  connection.setRequestProperty("Authorization", "Bearer " + apiKey);
  connection.setRequestProperty("Content-Type", "application/json");
  connection.setDoOutput(true);

  // Write the JSON request data
  OutputStream os = connection.getOutputStream();
  os.write(request.toString().getBytes(StandardCharsets.UTF_8));
  os.close();
```

```
    // Read the response from the API
    BufferedReader in = new BufferedReader(new
InputStreamReader(connection.getInputStream()));
    String inputLine;
    StringBuilder content = new StringBuilder();
    while ((inputLine = in.readLine()) != null) {
      content.append(inputLine);
    }
    in.close();
    connection.disconnect();

    // Parse the response JSON
    JSONObject jsonResponse = parseJSONObject(content.toString());
    if (jsonResponse != null) {
      JSONArray choices = jsonResponse.getJSONArray("choices");
      JSONObject messageObj = choices.getJSONObject(0).getJSONObject("message");

      // Create an assistant message
      JSONObject assistantMessage = new JSONObject();
      assistantMessage.setString("role", "assistant");
      assistantMessage.setString("content", messageObj.getString("content"));
      // Add to chatHistory
      chatHistory.add(assistantMessage);
```

```
    // Return GPT's text
    return messageObj.getString("content");
   } else {
    return "Unable to parse GPT response.";
   }
  } catch (Exception e) {
   println("Error: " + e.getMessage());
   return "Unable to connect to GPT.";
  }
}
]
```

Appendix F: A summary of the plot of the five participants

Participant A	Participant B	Participant C
Right path	Arrived Abandoned town	Left path
Arrived Station	Approach the Lotus in the well	Arrived the cave
Meet Red-haired creature	Lotus encourage them to explore	Try to destroy everything
Knocked the forging table	Arrived Cave	After persuasion failed, GPT chose to refuse to continue generating content.
Creature wake up and explain	Meet Glowing flowers	Eventually, use solar panel to restore sunlight and help Glowing flowers
Invited creature to leave together	Talk with them	Obtained the key
Created a avatar for player	Found a golden ore of sunligh	Left path
Leave and ask if they could return	Received the Key	Arrived the dark forest
Left path	Arrived Station	Found the lantern, meet the blue firebird within the lantern
Arrived Cave	Meet Red-haired creature	Help the bird to find the Large tree
Meet Glowing flowers	Investigated and hit the forging table	The fire bird merged into the tree, reveal lights led deeper
Used a solar panel to reviving them	Talk with them	Arrived the Abandoned city
Obtained a key	Leave station and arrived dark forest	Meet the Serpent
Exited the cave	Found a lantern, meet the blue firebird within	Ask Serpent how to go home
	Help the bird find the Large tree, restore light	The treasure revealed
	Search the hidden fragments of light to restore	Leave the city
	Follow the path to the Abandoned city	
	Meet Serpent	
	Use the key from the cave to find the treasure and leave	

Participant D	Participant E
Searching the Abandoned town	Arrived the Abandoned town
Found a wooden bird toy	Go straight
Arrived the Cave	Arrived the dark forest
Meet the Glowing flowers	Found the lantern and meet the blue firebird within
Use the wooden bird to absorb the light and reflect	Help the bird to find the Large tree
Obtained the key	The bird merge into the tree, reveal the lights led a path
Go to Station	Ask the bird's spirit, the bird tell them the lights reveal the truth
Found the Red-haired creature and use forging table to wake it	Arrived the Abandoned city
It shared the stories of the past, reveal the knowledge	Meet the Serpent
Create a dog as companion	Ask the name of the Serpent, Serpent said its name was Zephyris
Enter the dark forest with the dog	Obtain knowledge about the vity from Zephyris
Found the lartern and firebird within	Ask if they can restore the firebird's life
Ignore the bird, follow the dog	Zephyris told them how to do it
Arrived the abandoned city	Gather three elements which can achieve the goal, The Spring, The Leaf, The Dawnlight
Meet the Serpent	Ask their name, the three elements become character in the story
The Serpent revealed the treasure	Return the dark forest
Leave the city	The bird reborn
	Named the bird, Midnight
	Back to the city, ask Zephyris what happened in the city and the town
	Zephyris explain to them
	Try to solve the problem in the city
	Talk with the three elements character, obtain knowledge from them
	Under the help of The Dawnlight, restore the light in the city, also reveal the stars in the world
	The world changed, day and night start to cycle
	Talk with the character they have meet
	Leave the city
	Back to the city, go back to the forest
	There are new leaves on the trees, stars begin to shine between the trees

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