

# CHIKYUCHI

## In-person/remote game exhibition for climate change influence

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### ABSTRACT

Arguments for and against action in regards to climate change are deeply rooted in predetermined emotional responses, making it difficult to counter climate change denial armed only with objective data and scientific evidence. Interactive games, however, can engage people on an unconscious level, by promoting causes that align with the player's intrinsic motivations in the interaction. Instead of argumentation and data, we created a game exhibit that promotes the values that align with pro-climate action without explicitly persuading for climate action. We designed Chikyuchi based on the purpose of caring for a nonhuman entity that represents nature, engaging antagonistic viewpoints like climate change denial indirectly. The game uses the guise of a Tamagotchi to enable audiences to take pro-climate actions metaphorically in the interaction with the avatar. Audiences understand the game as communicating care-taking in the context of the environment as opposed to a physical intervention in depletion of resource. They also collaborate in taking pro-social actions using the game instrument, sharing their purpose on a human level as opposed to debating about policy.

### CCS CONCEPTS

• applied computing; • arts and humanities; • media arts;

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## 1 INTRODUCTION

Although there's a preponderance of scientific evidence on climate change [8], there continues to be a discrepancy between understanding that climate change is happening and actually taking action against it [10]. This discrepancy may be due to innate psychological factors, such as thinking that climate change is distant, unrelated, and inevitable, which makes it difficult to affect change using purely data and scientific arguments that appear logical, yet don't affect human psychology [6, 13]. Long-term changes in behavior for climate action relies on intrinsic motivation, which requires aligning personal goals with narrative themes of game experiences designed for social good [5]. Thus, we adopt a socially engaged

form of speculative design [3] on interactive games to communicate climate change by reinforcing actions as metaphors for climate action, without explicitly persuading the audience through logical arguments.

On the physical level, climate change sees resource limitations, over-consumption, lack of natural resource management, failure of policy efforts to limit growth, etc. These are policy-related issues, and citing these arguments do not necessarily change perception or behavior. Studies have shown that direct evidence and scientific data do not effectively provoke public behavioral change [9]. The human level of climate change, on the other hand, is concerned with immediate gratification, myopic vision for future consequences, the idea that ignorance is comforting, the belief that individual action contributes little, desensitization over negativity, and lack of concern for fellow creatures and life forms. These human psychological issues lie at the root of climate inaction [7], and are addressed through narrative and gamification strategies that promote pro-climate long-term behaviors. In particular, we take on the last of the human level concerns to show that caring for fellow lifeforms is the normalized strategy in a game, and hence by alignment, in life as well. We hope to capture the attention of even climate skeptics who do not know the influence imposed by the game, to promote pro-climate behaviors implicitly while avoiding drawn-out, contentious debate.

Chikyuchi has both a critical and a speculative layer. The work criticizes the way we have been brought up in an environment that promotes building affective relationships with inanimate consumer products [4] like Tamagotchi [2], whilst failing to promote empathic bonds with nature. This has left us with a strong affective relationship with consumerism and pop culture and an apathetic relation to nature. In the midst of the Climate Crisis, we find too little too late that a constant stream of fruitless disaster and panic news. This leads to an apathy of action to adequately handle the Climate Crisis [12]. Looking back to how anthropomorphic deities representing nature in humanoid forms was a way that enabled people to empathise and coexist with nature, Chikyuchi speculatively contemplates how to similarly use anthropomorphism in our current society for the same outcome [11]. However in our case, it is not anthropomorphism embedded in religion, but embedded in a language that our generation grew up with and understands: consumer and pop culture. Thus, consumer and pop culture can become a gameful vehicle to reconnect people with nature instead of disconnecting them with it. In this project we will use play in the form of Mimesis as a means for audiences to make that care-taking connection [1]. The Chikyuchi avatar serves as a way to motivate caring for the Amazonian forest in a reinforcement-based strategy, so that the audience's actions in the exhibit experience (feeding it, healing it, overcoming uncertain weather, etc) can be realized as pro-climate action relevant to real life.

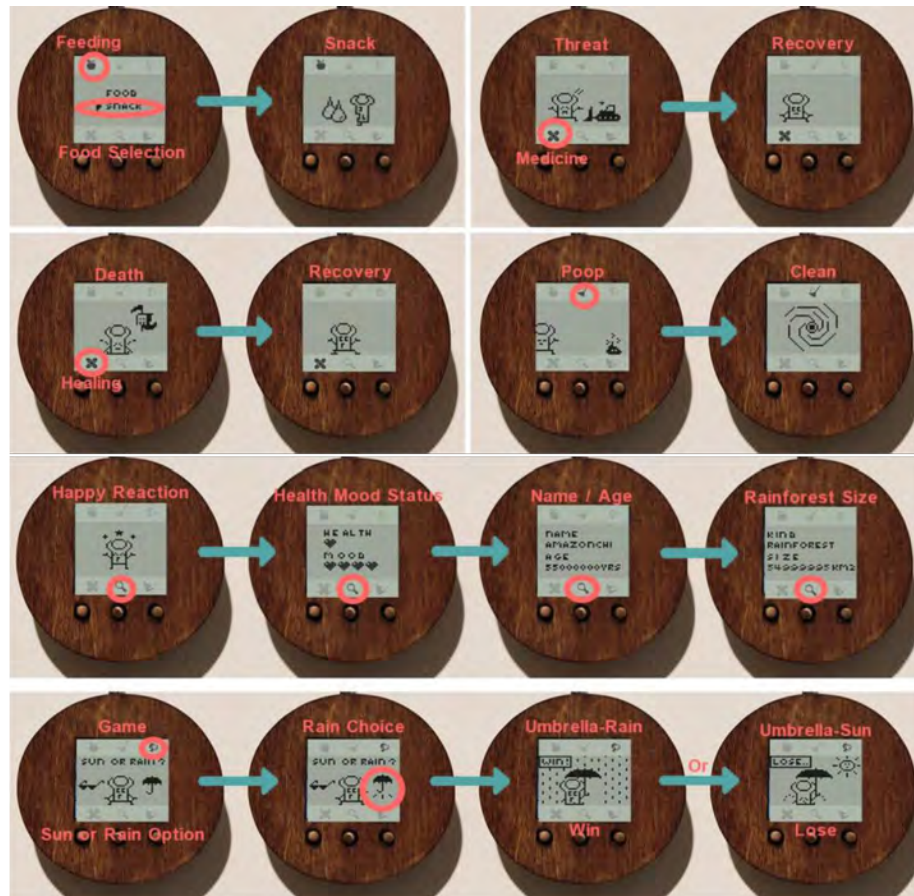
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**Figure 1: Game interactions for both physical and virtual exhibition. (Top Row) Feeding the Chikyuchi water and helping it recover from bulldozer threat. (Second Row) Healing Chikyuchi from death and cleaning up after Chikyuchi. (Third Row) Checking Chikyuchi’s health, mood, and other info (name, age, the live declining rainforest size). (Fourth Row) The umbrella/sunglasses game flow in which the player must guess whether the next day will be sunny or raining (whether the Chikyuchi should wear sunglasses or bring an umbrella). Guessing correctly continues the game indefinitely and increases the mood of the avatar.**

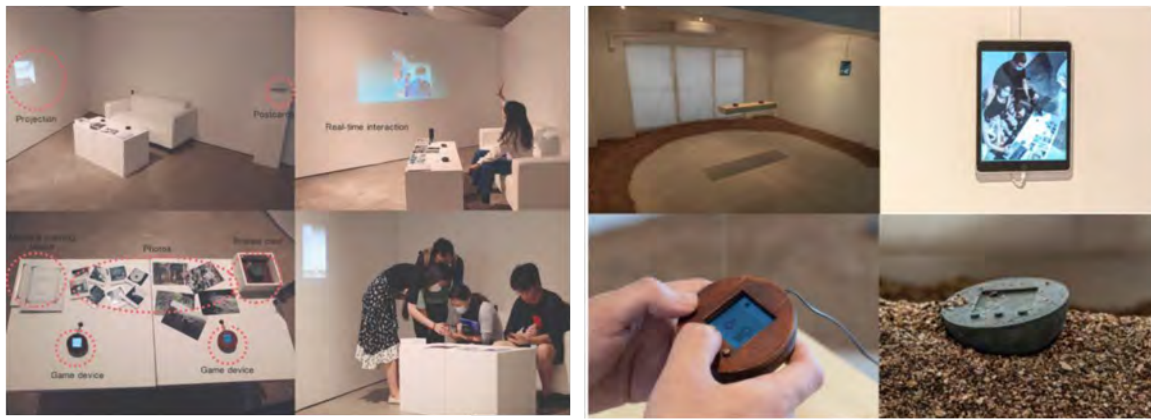
## 2 ARTWORK DESCRIPTION

Chikyuchi is a virtual pet game, in which the player is tasked with taking care of the digital pet over time. The main avatar in the Chikyuchi game anthropomorphizes a natural resource (Amazon rainforest) declining at a rate of a hectare a minute in reality, leading to increased surface temperature and reduced rainfall. Chikyuchis are connected to API data that determine the health of the avatar. Connected to the level of forestation in the deforestation API, it reports the size of the Amazon decreasing  $2\text{km}^2$  per second in the stats menu. Chikyuchi is in bad health due to deforestation and global warming putting the planet at risk. Although users can temporarily cheer up the Chikyuchis with thematically related food/games, increasing their mood, it won’t change their critical health, which is always low due to human devastation.

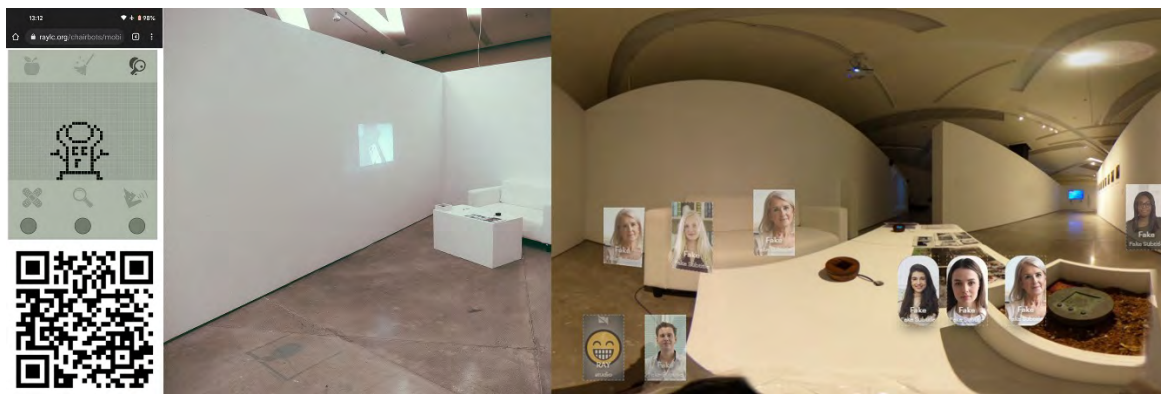
The Chikyuchis also periodically chat about each crisis. It does this by generating text using the transformer language model GPT-2 trained on tweets related to deforestation and global warming over a

3-day period (temperature 0.8, 6500 epochs training). The text used reflects subtle forms of persuasion rather than direct invocation to the player, because the twitter-based training produced social media-post-like messages that subtly nudges the players.

The device consists of three buttons (select, execute, cancel) for in-game decision-making (Fig. 1). The six functions are snacks, cleaning up, game playing, healing, stats, and special attention. Each decision in the game affects Chikyuchi’s mood but does not change its always poor health. Giving it water increases mood but not donuts. Over time, random threats like bulldozers and death may affect Chikyuchi, at which point the user must navigate to the appropriate cleaning or healing menu to avoid impairment of its critical health. If further threats are not healed, the death would start to creep up. There’s also a guessing game about the weather in which you tell Chikyuchi to bring an umbrella or sunglasses the next day, anticipating rain or sun. If repeatedly choosing the right outcome, it raises the avatar’s mood. It also subtly narrates



**Figure 2: Physical exhibition strategies.** (Left Panels) Labeled exhibition plan includes furniture setup (top left), real-time interaction between locations of exhibition through projection (top right), layout of props (bottom left), evaluation of gameplay (bottom right). (Right Panels) Exhibition plan with hanging table (top left), real-time interaction between Tokyo and Hong Kong through an ipad on the wall (top right), close-up of game device interaction (bottom left), bronze sculpture showing future decline (bottom right).



**Figure 3: Virtual exhibition strategies.** (Left) Online version of game through QR code. (Center) Zoom background for virtual exhibition online. (Right) Collaborative play through the Ohyay platform for audience to play Chikyuchi together in same space.

the climate change story. The info menu provides the health, mood, age, and size of Chikyuchi.

The physical exhibition takes place in a room or enclosed space with lighting, a table, and a sofa or chair or bean-bag, or comfortable furniture (Fig. 2). The shells and two Chikyuchi devices are available for shipment. The devices must be connected to a wall outlet via our custom cables, and connected to internet. Other objects on the table for decoration and environmental storytelling. The plinth and seating should be the same color. Plinth should have two holes for the cable outlets. While the devices can be played without cable, staff must reconnect in case of low battery. Audience interaction via projection is optional if the gallery is opened to interacting with guests from outside the local area.

If social distancing forces us to switch to hybrid exhibition modes, we have already prepared a preliminary online version of our game accessible through QR code at the venue or by going to <https://raylc.org/chairbots/mobile.html>.

[org/chairbots/mobile.html](https://raylc.org/chairbots/mobile.html). PC version is also available (Appendix). One possibility for online showcase is to use a room in Ohyay (<https://ohyay.co/>) to allow for collaborative play. The shared nature of the intervention is to allow people to play together online and off.

### 3 RELEVANCE

This work is positioned as a hybrid physical-virtual interaction which aligns the goals of the player's interaction in a game with climate change education. These tangible interactions are embodied in the way the story is told, and adapts a serious game for public consumption. The material aspects of the game consists in the wooden Tamagotchi that houses the game (Fig. 2), designed to be evocative of both the "fun" nature of the device for caretaking in Japan, but also to narrate climate change and deforestation through

its old wooden appearance and the accompanying bronze sculpture. It involves computational strategies like GPT-2 for generating Chikyuchi text (accessed through the cancel button), status updates in the game (health and mood), and API access. Most importantly it positions itself as a work that aligns with social good for climate action influence through the use of an artistic contrivance specifically designed to bring out the best in people's need to care for others. As such even climate change deniers and anti-science campaigners (essentially our target group) would have a hard time not interacting with this engaging and visually appealing device.

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## APPENDIX

Online version of game:

mobile[<https://raylc.org/chairbots/mobile.html>], PC[<https://raylc.org/chairbots/chikyuchi.html>]

Video documentation of exhibition:

Hong Kong [<https://vimeo.com/638493089>], Tokyo [<https://vimeo.com/597188148>]

Exhibition websites: [<https://recfro.github.io/chikyuchi/>] and [<https://vincentruijters.com/Chikyuchi>]

The GPT-2 generated text pretrained to twitter feeds used in the game when Chikyuchi speaks:

- This project is called Terrains, and it's in danger. It's a sad story to be told but an important story all the same.
- It's as if we've learned.
- Let's figure out a way to reward those that have remained optimistic for the future of this species.
- Let's figure out a way to reward those that have remained vigilant & keep everything alive.
- It is now or never. Please help us help you. A natural disaster is unfolding in a tragic way.
- I don't think we should give up!
- We can do this, I believe, because nature is the source of so many of us.
- What I am doing right and what I have achieved despite unprecedented challenges.
- What I am doing right now is eerily all I've got.
- Never believe that you're too small to make a difference.
- Sometimes my brain reminds me of everything awful humans do.
- 1) We need to understand why 2) We need to stop it. Sometimes it becomes necessary to patch things up.
- That's the 1st thing when we wake up in the morning, is to be thankful to the Great Spirit for the Mother Earth.