



PingPonGPT: Write Your Next Paper while Playing Table Tennis with the Help of AI

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Abstract

Is it acceptable that we game scholars spend more time writing than playing? How many of you started an academic career in games dreaming of looking at a flat screen, following a flashing cursor and thinking about your next word? We spend hours sitting, straining our eyes on monitors. Should composing text be like this, or could it be more fun? We propose using table tennis as an activity where two people can play and write a paper simultaneously, supported by ChatGPT. This paper articulates the AI-infused table tennis setup and its potential to transform academic writing.

CCS Concepts

• **Human-centered computing** → *Gestural input*; **Collaborative interaction**; Mixed / augmented reality; **Systems and tools for interaction design**; • **Computing methodologies** → **Natural language processing**; **Machine learning**.

Keywords

AI, ChatGPT, Games, Play, Table Tennis

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1 Introduction

What if scholars could merge physical play with intellectual work? This paper delves into this seemingly contradictory idea, inspired by a provocative AI-enhanced table tennis setup. It is not the first time people have tried to make writing enjoyable, treating it as play [9]. While some may view writing and all related interactions as playful and enjoyable [3], must those of us who do not derive pleasure from writing endure the immense anxiety that accompanies the task?

But what if we could change that? We decided to explore the idea of combining two seemingly opposite activities: playing table tennis and writing a research paper. Our belief is that this integration

could break the monotony of traditional writing methods, boost productivity, and spark creativity through embodied thinking and spontaneous play [1, 6, 8]. Our main question: how can we engage in both activities *simultaneously* instead of alternating between them?

2 PingPonGPT

We had the idea to use table tennis as a way for two people to collaboratively write, with a bit of help from an AI chatbot like ChatGPT. We repurposed a PingPong table, embedding it with an Arduino-driven sensor system that interacts with ChatGPT. Although table tennis has been studied earlier in HCI [4], our approach differs in the sense that we consider it as a multimodal conversational interface for human-AI interaction. In addition, verbal and physical engagement during the game is used to generate and shape a written academic content that goes beyond the space, duration, and recreational dimension of the sport activity.

In PingPonGPT, as we play and brainstorm, certain spots on the table equipped with force sensors trigger preset, yet generative prompts (e.g., be critical about the topic we have just discussed, ask me a question about this topic). As the game goes on, ChatGPT listens in and reacts based on these prompts, keeping our discussion lively and our minds engaged with both the game and our writing project.

While hitting the ball, we're also throwing ideas back and forth. When the ball lands on specific spots, ChatGPT jumps in with critical questions or fresh perspectives. The game becomes not just a break or physical play, but a key part of our intellectual process.

We can turn these transcripts into a paper in real-time or, like in our case, feed them into an OpenAI assistant to help draft a paper for a specific conference, such as CHI PLAY 2024 PoP. Of course, we need to carefully check these materials to ensure all important points are covered, especially in long recordings. Our two-hour session resulted in about 60 pages of transcripts [2].

3 Reflections and Critique

Here we reflect on this activity from a first-person perspective. The ideas and reflections below are a blend of topics we have discussed during our gameplay and suggestions and speculations shared by ChatGPT.

3.1 Cognitive and Physical Integration

Balancing intellectual and physical tasks is challenging. You need to maintain deep mental focus while keeping up with quick reflexes. One activity can easily overshadow the other, and physical fatigue



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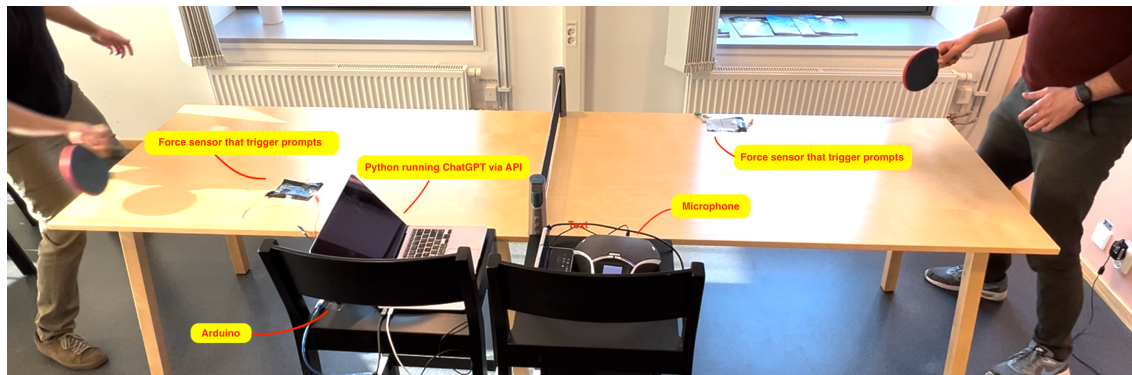


Figure 1: PingPonGPT setup

can start affecting cognitive performance, potentially compromising both tasks.

However, theories of embodied cognition suggest that physical movement can enhance cognitive functions like memory and problem-solving [5, 7]. Playing table tennis while engaging in intellectual discussions can help solidify abstract ideas and articulate complex thoughts in writing. This integrated approach can foster the development of novel ideas during the game.

In this topics, ChatGPT contributed to the knowledge creation with above ideas and as the authors of this paper, we reflected on whether these are valid or reflecting the reality. In our experience, the process were more stimulating than it was tiring. That may be due to table tennis being less fatiguing, especially when played casually. Based on our experience, table tennis with AI actors in the game system could be an ideal activity for creative paper writing.

3.2 Dynamics of Play: Bearing with AI and Spontaneity

Reflecting on our AI-assisted table tennis sessions, we noticed that extended interaction with the AI led to deeper engagement and more nuanced answers. Playful and embodied methods like this can enhance the depth and quality of the discussion by creating an environment where engaging with the AI for a longer time is possible.

Moreover, unexpected research prompts and gameplay challenges injected elements of surprise, driving adaptive and dynamic thinking. These elements might require players to shift their focus and adapt to new information or tasks, possibly fostering a more flexible mindset. For instance, Ahmet mentioned that we would not talk to each other this long about the paper idea if we were not discussing it through our playful engagement in PingPonGPT. The prompts appeared to evolve from mundane to more engaging and thought-provoking as the context changed. This integration of surprise could help disrupt monotony, making the process seem more stimulating and intellectually engaging.

3.3 Collaborative Thinking and Intergenerational Learning

One of the promising aspects of PingPonGPT is the potential for fostering intergenerational and interdisciplinary collaboration. Shared physical activities like this can break down hierarchical barriers,

promoting mutual learning and creating a collegial atmosphere. It can also create a natural dynamic for turn-taking in conversations, allowing to contribute equally. Oz mentioned, *"It's also really nice back and forth between the person who you play because, I mean, you know, it's already a kind of conversation through the ball."* Then Ahmet said *"Exactly. The tangible conversation"*.

However, collaboration presents challenges. Involving two players and the AI agent in conversation, alongside the game's dynamics, also made the turn-taking a bit tricky. The flow of conversation can be disrupted by the pressure pads on the table, thus we need improve the design with careful calibration of how turn-taking, gameplay flow, and AI prompting work together.

3.4 Innovations about Gameplay

We experienced that the additional challenge of hitting pressure sensors added another layer of strategy and seemed to increase the fun part of the game for us. Our reflection went as: *"while playing the game we had put these pressure sensors on the table and this created an extra challenge... it creates some kind of other intellectual level of integration with the table. And also of course based on your skills and so on"*. This suggests that integrating interactive elements like pressure sensors might not only make the game more engaging but might also enhance cognitive engagement.

Nevertheless, the added complexity from the sensors can create skill-based differentiation. This might come with interesting gameplay mechanics such as advanced players aiming for more complex prompts and targets, enriching their experience, while beginners could still enjoy the game by focusing on less demanding tasks. On the other hand, people with less table tennis skills might be discouraged to join because of the additional challenge.

4 Conclusion

Exploring the combination of table tennis with the intellectual task of writing an academic paper shows both significant benefits and notable challenges. This unconventional approach could boost creativity, engagement, and teamwork, fueled by the seamless integration of AI technologies. However, it is crucial to consider cognitive load and physical fatigue in this experience; data privacy and security concerns of AI-enhanced systems should also be taken into account.

Continued experimentation and critical evaluation will be essential. We plan to use the approach described in this paper for making the presentation at CHI PLAY 2024, potentially bringing new horizons also to academic presentations. By addressing these challenges and harnessing the benefits, this innovative approach could redefine how we blend play and productivity in academic research.

Acknowledgments

ChatGPT was heavily involved in the writing of this paper. We have used it as a "Research Buddy" for creating the paper draft and expanding relevant sentences based on the transcript. Moreover, we also use it as a "Polisher" to match the tone of the text and for proof-reading. These mentioned methods are based on [2].

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