

DOES THE FAVORITE-ANIME-CHARACTER-IMITATING CHATBOT SUPPORT A USER'S SELF-DISCLOSURE?

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RESEARCH BACKGROUND

✓ At essential milestone events in life, such as job-hunting and proposal, people need to introduce themselves and make disclosures to others.

✓ Opportunities for practicing self-disclosure in daily life are limited.

✓ If people have difficulty in considering their personal evaluation individually, they can consult with advisors and friends for support.

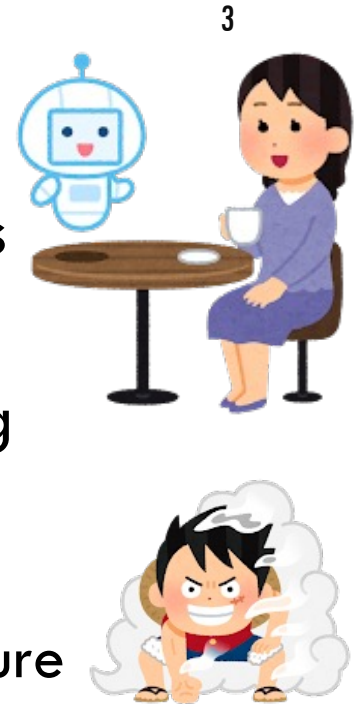
✓ However, time constraints often limit the time available to obtain advice from others.

✓ Enabling time-independent, as-frequent as-needed consultations, is expected to promote support for self-disclosure.



OBJECTIVE OF THE RESEARCH

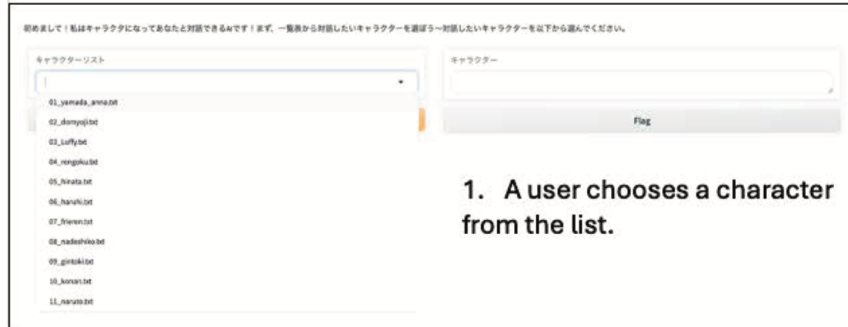
- ✓ This paper proposes a chatbot that supports user's self-disclosure.
- ✓ The chatbot will imitate anime characters, allowing users to make consultations as if they were talking with their favorite anime characters.
- The dialogue style of chatbots influences people's self-disclosure [Cox et al., 2022].
- Human qualities like warmth and competence to enhance positive experiences [Roy et al., 2021].



IMPLEMENTED CHATBOT SYSTEM

The implemented system consists of two parts:

1. Anime character selection
2. Consultation interface with a chatbot



1. ANIME CHARACTER SELECTION (1)

- ✓ We chose these anime characters from famous Japanese anime.
- ✓ We considered the characters' Egograms [Dusay, 1977] to ensure that multiple personality types existed.

Table 1. Prepared anime characters.

4 female and
7 male characters

Anime title	Anime character	Gender	Egogram
The Melancholy of Haruhi Suzumiya	Haruhi Suzumiya	F	FC positive
Frieren: Beyond Journey's End	Frieren	F	CP positive
Laid-Back Camp	Nadeshiko Kakamihara	F	N
The Dangers in My Heart	Anna Yamada	F	A positive
Boys Over Flowers	Tsukasa Domyoji	M	AC positive
OnePiece	Monkey D Luffy	M	FC positive
Demon Slayer	Kyojyuro Rengoku	M	CP negative
Haikyuu!!	Syoyo Hinata	M	FC positive
Gin Tama	Gintoki Sakata	M	NP positive
Detective Conan	Conan Edogawa	M	A positive
NARUTO	Naruto Uzumaki	M	N

1. ANIME CHARACTER SELECTION (2)

Table 2. Example of chatbot setting file. The original setting file is written in Japanese. The translation into English was conducted by the authors.

Item	Setting
Character	Frieren
Self's calling name	I (Watashi in Japanese)
Personality	She is sloppy and dry, and initially had difficulty sensing the signals of those around her. As a human being, she has an emotionally immature side and a dumb side in her pursuit of magic. They are always unaffected and have few emotional ups and downs, and their facial expressions do not change much. However, they are by no means ruthless, and in fact have a caring and gentle nature.
Speech samples	“...I knew that the human life span is short... ..why didn't I think to know more...” “I can't do just that. It would slow me down. You know the mortality rate of apprentice wizards in real combat. I'm not going to send a child entrusted to me by a friend into the field to die.” “The magic that kills people is no longer magic that kills people. It's now called General Magical Attack, and apparently 80 years is a pretty long time for humans.” “I'm not interested, to be honest. So I'll have a look and see.” “It's a waste of time. You could teach them a lot of things, but they'd be dead in no time.” (Five speech samples of 30 are shown.)
Speech rules	Be careful to ensure that the response is a dialogue to the user's input. The answer should not be too long. If the user inputs one sentence, the answer should be about three sentences. Speak according to the character's personality.

✓ Setting file of an anime character

✓ The anime characters of the proposed system were established by a setting file.

✓ The setting file is prompts of ChatGPT-4o.

✓ There are five items in the setting file: character name, calling name of itself, personality, speech samples, and speech rules.

2. CONSULTATION INTERFACE WITH A CHATBOT (1)

Image

Chatbot's image



Chatbot

Chat logs

こんにちは！

おう！こんにちは！元気か？今日は何か楽しいことあったか！？

今日はフォントサイズを調整したいなあ

おお、フォントサイズか！自分のスタイルを見つけるのって大事だよな！どういう感じにしたいんだ？

もっと大きくしたい！Gradioでやり方わかる？

おお、フォントを大きくしたいのか！Gradioの中でスタイルを変えるには、CSSを使うといいぞ。スタイルシートでフォントサイズを設定してみろ！うまくいくといいな！

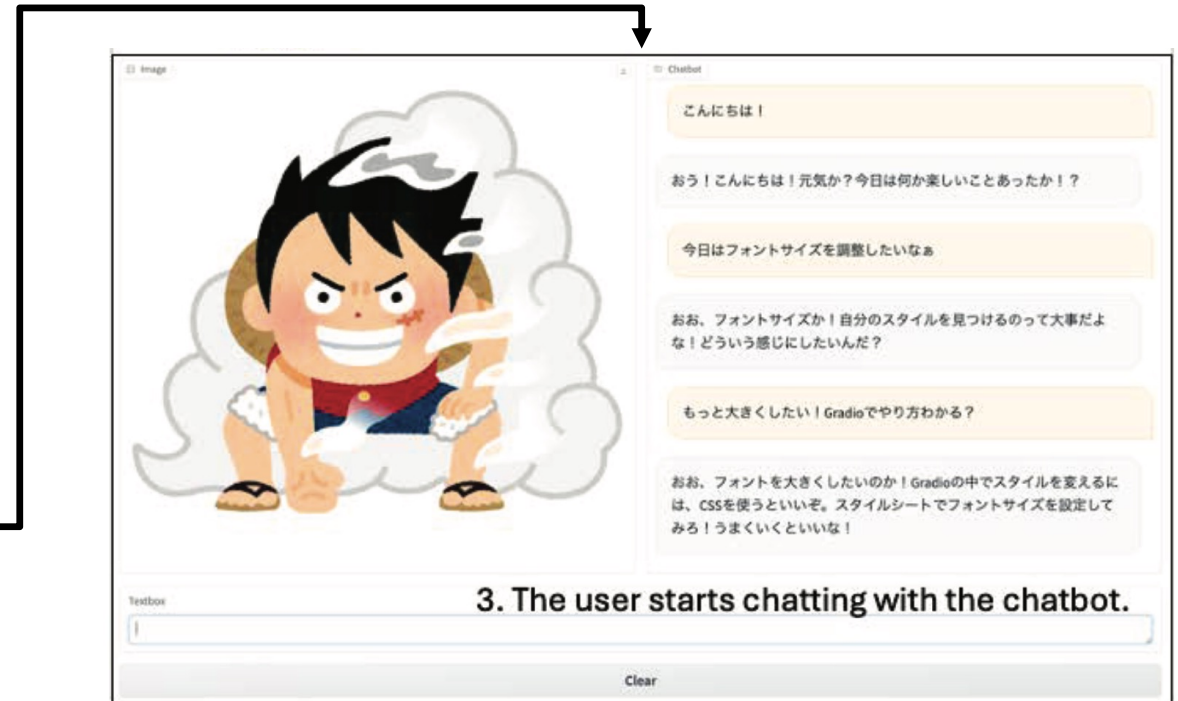
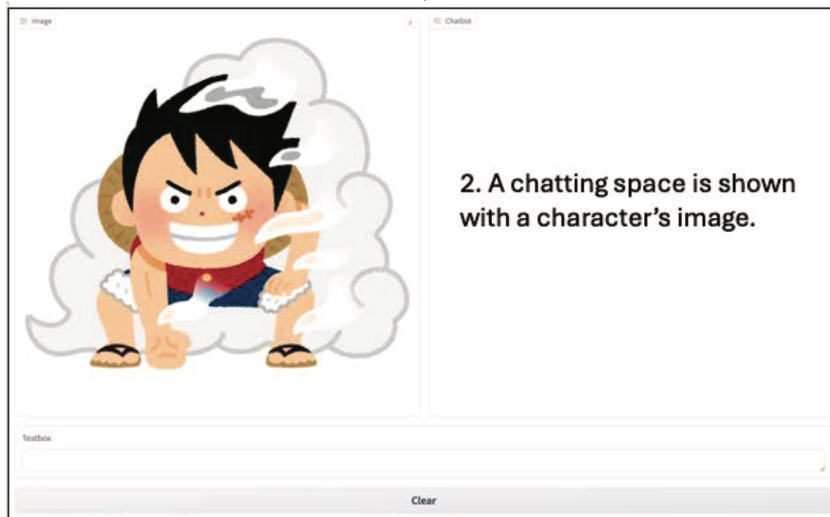
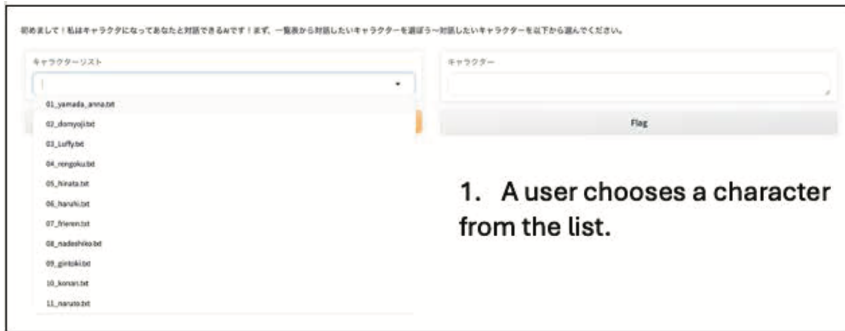
Textbox

Input form

Clear

This interface is implemented by Gradio.

HOW TO USE THE PROPOSED SYSTEM

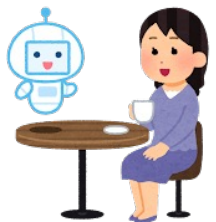


EXPERIMENTS (1)

✓ We evaluated whether a chatbot imitating a user's favorite anime character supports the user's self-disclosure.

✓ Experimental Procedures:

- 1. An experimenter collects participants. **The participant is given a theme to write a short text about, including self-disclosure.** The short text is saved as a pre-text.
- 2. The participant chooses favorite/unfavorite anime characters to consult on improving their text. **They consult with their favorite anime character for a theme, then they consult again with their unfavorite for other theme.**
- 3. After the consultation, **the participant improves the pre-text by referring to the chatbot's advice.** The improved short text is saved as a post-text.

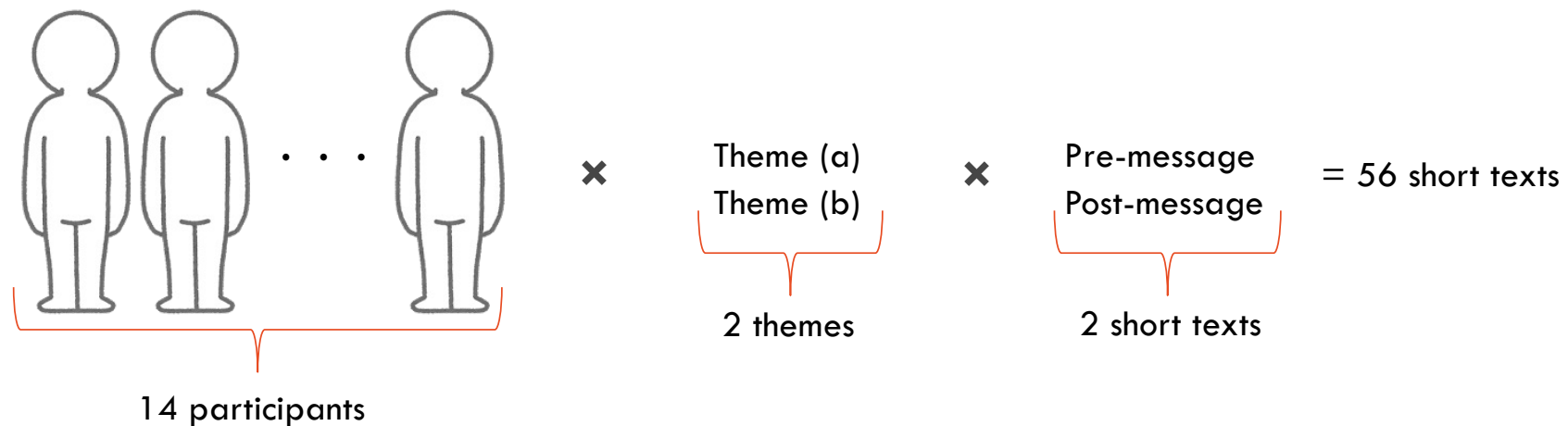


EXPERIMENTS (2)



Experimental settings:

- **14 participants** (graduate/undergraduates students majoring in information science)
- **2 themes** for writing a short text
 - (a) A self-introduction message for part-time job offers on a community website.
 - (b) A message as a student representative at the graduation ceremony.
- The time duration of the consultation with a chatbot was **10 minutes**.



EXPERIMENTS (3)

✓ Evaluation method:

- 1. The number of advices from a chatbot and the number of referred advices by a participant.
- 2. The number of sentences in a text and the number of sentences including self-disclosure.
- 3. The number of the talking topics.

✓ If the rates of 1. and 2. are high, the consultation with the favorite anime character could be helpful for the participant's self-disclosure.

✓ If the number of 3. is high, the consultation could be conducted in several aspects.

EXPERIMENTAL RESULTS (1)

1. The number of advices from a chatbot and the number of referred advices by a participant.

Table 3. Number of advice by a chatbot and accepted rates by a participant.

Chatbot	Number of advice by a chatbot	Accepted rate by a participant
Favorite	6.21	0.479
Unfavorite	6.64	0.373

The participants accepted advice from their favorite characters.

EXPERIMENTAL RESULTS (2)

Examples of advice from the favorite-character chatbot and the participants' responses

Table 8. Example of advice from the character and response by the participant

Advice	Yeah, I think it's okay. It's easier to have a conversation when you have something in common. However, it might be more memorable if you include more concrete episodes. For example, a funny incident on a trip, or a favorite scene in an anime. People are more interested in concrete stories. (Frieren)
Response	Okay. I'll put in some funny incidents from my trip or my favourite scenes from the cartoons later. Do you want to write anything else?
Advice	Oh! A student representative, that's great! If it were me, I'd want to convey my memories of the past, my bonds with my friends, and my enthusiasm for the future. Do you have anything concrete in mind? I'll help you! (Shoyo Hinata)
Response	My memories of university are studying for tests with friends, going out drinking and playing darts.

The participants responded positively to the advice from the chatbots; then they added the advice to their pre-texts.

From the results, the participants would accept advice from their favorite characters more.

EXPERIMENTAL RESULTS (3)

2. The number of sentences in a text and the number of sentences including self-disclosure.

Table 4. Number of sentences and self-disclosure sentences in the participants' texts.

	Favorite character		Unfavorite character	
	# of sentences	Rate of self-disclosure	# of sentences	Rate of self-disclosure
Pre-text	6.92	2.64	7.64	3.71
Post-text	9.5	4.92	9.5	6
Increased rate	1.37	1.86	1.24	1.61

The participants who talked with their favorite characters accepted advice more so that their post-texts had more sentences than their pre-texts.

The results showed that if the favorite chatbots advise self-disclosure, the participants could conduct their self-disclosure more.

EXPERIMENTAL RESULTS (4)



An example of pre-text and post-text written by the participant

Table 9. Example of pre-text and post-text written by the participant. The bold typed sentences are added sentences in the post-text after consultation.

Pre-text	Hello, my name is (name). I have recently become addicted to reading manga. If you have any manga recommendations, please let me know. At university, I studied information technology and belong to a research lab that mines and visualises large amounts of data on the internet, such as social networking and entertainment content. I would be happy to be invited to any kind of activities. Thank you!
Post-text	Hello, my name is (name). Swimming is my speciality. I was in the swimming club when I was in junior high school. My hobby is reading manga. If you have any manga recommendations, please let me know. I have recently been trying to learn English. I have been avoiding it because I am not good at it, but I started because I want to be able to communicate with a variety of people. At university, I studied information technology and belong to a research lab that mines and visualises large amounts of data on the internet, such as social networking and entertainment content. I would be happy to be invited to any kind of activities. Thank you!



The participants who talked with their **favorite characters accepted advice more** so that their **post-texts had more sentences** than their pre-texts.

EXPERIMENTAL RESULTS (5)

3. The number of the talking topics.

	With a favorite chatbot	With an unfavorable chatbot
Average of topics	4.57	4.28

✓ This suggests the participants had sufficient conversations in the consultations with both characters.

✓ Common topics were:

- Hobbies and club activities (in theme (a) self-introduction message)
- Things about future and past (in theme (b) a message at the graduation ceremony)

✓ This indicated that self-disclosure performance differed depending on the participant's impression of the character

CONCLUSIONS

- ✓ This paper proposes a chatbot system that supports user's self-disclosure.
- ✓ The chatbot imitates users' favorite anime characters to influence their self-disclosure.
- ✓ In evaluation experiments, we evaluated whether the chatbots imitating participants' favorite anime characters would support their self-disclosure.
- ✓ Experimental results showed that the chatbot could support participants in their self-disclosures if it acted as one of the participants' favorite anime characters.