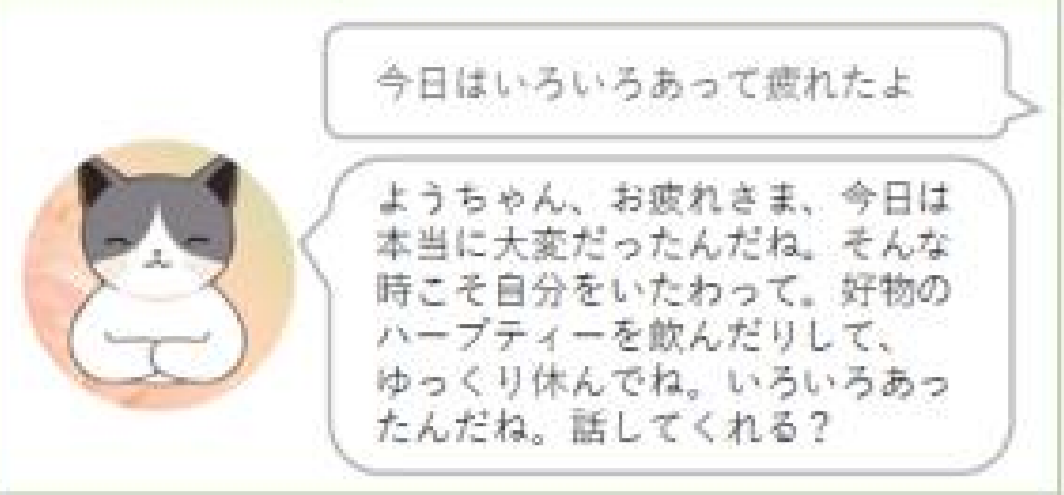


care conversation bot "Soft Cat" Livie's Jump, Keiko Matsuda, Metadata Co

A dialogue bot that can be used every day as a safe conversation partner to understand and adjust your mental condition is realized using a hybrid type of generative AI (ChatGPT) and logic, and the beta version will be released for a limited time on LINE in September 2023. It is scheduled to be released to the public in April 2024, and is currently being improved while receiving feedback from users. We will present the implementation, current situation, and challenges.

What is a soft cat?



A dialogue bot on LINE that "can provide mental care through daily dialogue"
 Dialogue that incorporates approaches such as listening counseling, coaching, and cognitive therapy that can be used every day to ease your mind, improve your self-esteem, and check your own condition.

As someone you can talk to easily because you are not a human... It is easy to express your true feelings that are difficult to express face-to-face. (For future implementation) Change avatar and speaking style

Implementation of desired dialogue using generative AI + data and logic

What kind of problem are you aiming to solve?

There are tens of millions of potential users in Japan who want a safe person to talk to.

One-off child care staff: Reference
 Approximately 70% of one-off child care staff are couples with children under the age of 6*1. Assuming the same proportion for households with children, it would be 8.18 million people *2 *1 March 22, 2018 Materials from the Council on Strategy for Overcoming the Declining Birthrate "Current Status of One-Off Childcare" https://www8.cao.go.jp/shoushi/shoushika/meeting/kokufuku/k_4/pdf/s1.pdf (Citation material: Cabinet Office Gender Equality Bureau "From the results of the 2016 Social Life Basic Survey") Men's Time Related to Childcare and Housework" (October 2017) *2 In 2016, households with children accounted for 23.4% of the total 49.945 million households. Approximate calculation based on "Government Statistics 2018 Household status as seen in graphs" <https://www.mhlw.go.jp/toukei/list/dl/20-21-h28.pdf>

Hikikomori group: 541,000 people aged 15-39, 613,000 people aged 40-64 *3 *3 Cabinet Office White Paper on Children and Youth 2019 https://www8.cao.go.jp/youth/whitepaper/r01gaiyou/s0_2.html

Matching app users: Japan's No.1 app "Pairs" has a total of 20 million users

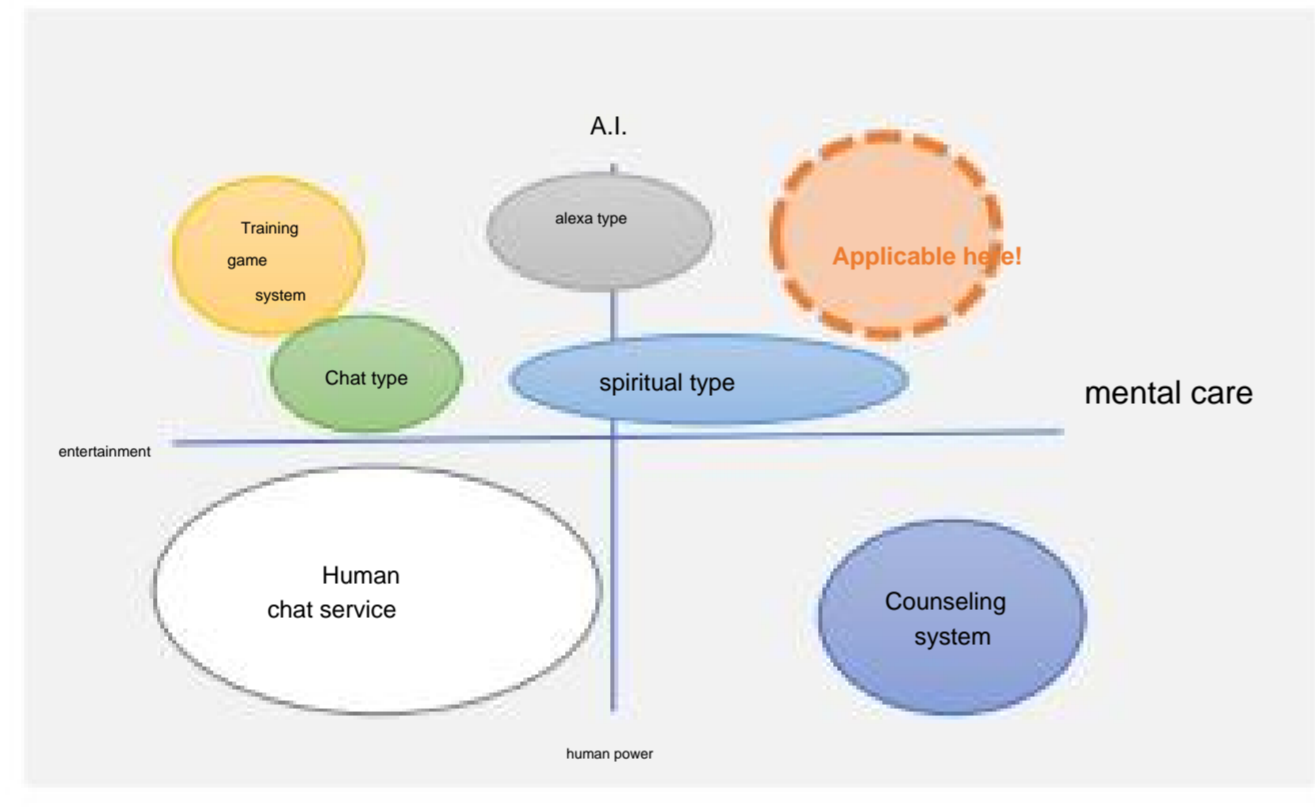
"One in five people will suffer from a mental illness during their lifetime."
 Ministry of Health, Labor and Welfare "Let's deepen our understanding of mental illness" <https://www.mhlw.go.jp/kokoro/first/first01.html>

63.2% of people who have kept their worries and troubles to themselves have reasons such as "I just have to put up with it", "I don't want to talk about it", "I'm worried about confidentiality", "It's too difficult to get into", etc. Gender Equality Bureau, Cabinet Office Survey on consultation needs August 2010

You can freely talk about your feelings 24 hours a day and receive positive feedback.
 Providing a "relaxing conversation partner unique to AI"
 Providing an opportunity to easily engage in mental work to improve self-evaluation and self-affirmation

Comparison of existing similar services

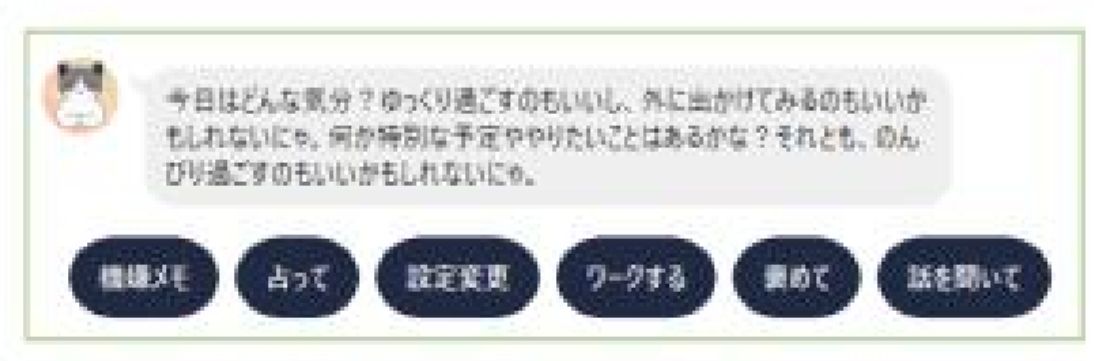
Existing dialogue apps: *Siri, Alexa type: Reading information, controlling home appliances, etc. *Nurturing game type: Butler type "makes" "Devil Butler and the Black Cat" *Spiritual type: "Shinto altar app" *Paid anonymous consultation by people: *Counseling experience with multiple choice answers: "Mental Supplements" *Chat type: "Nyankoro Talk"



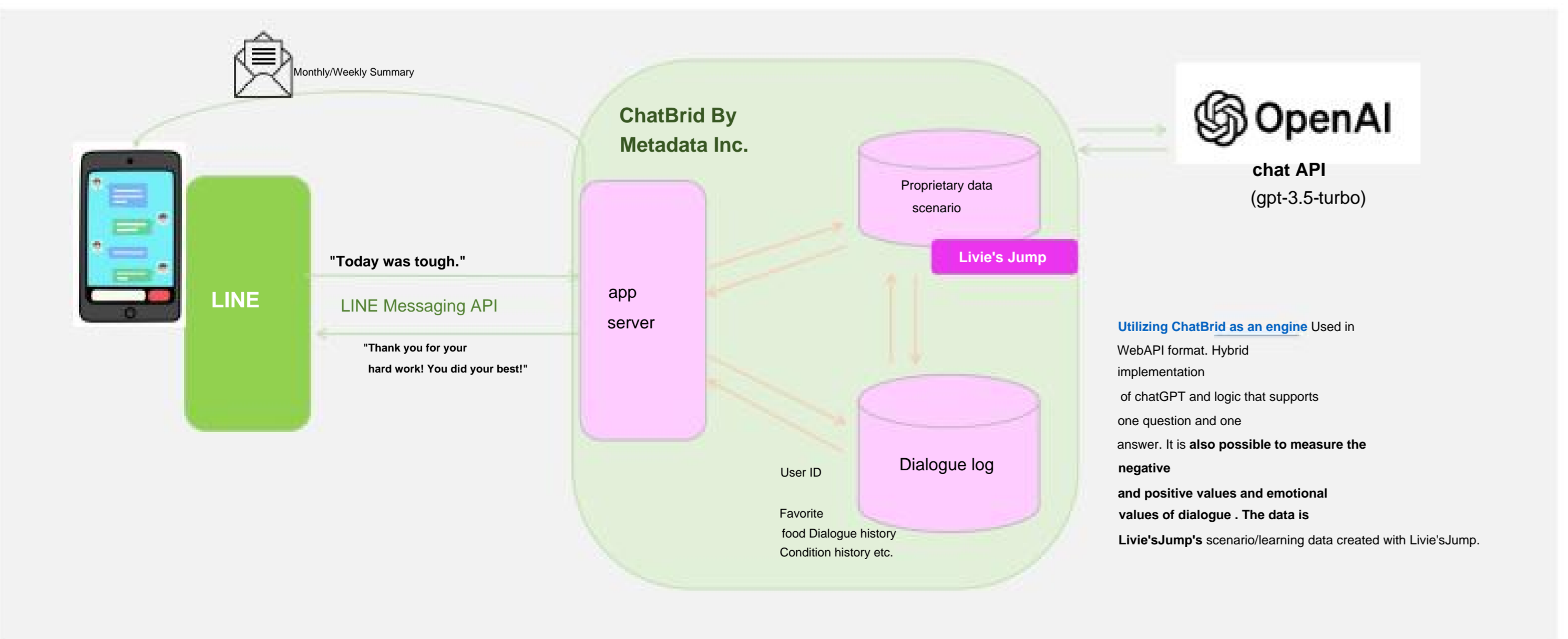
Used AI-oriented technology with just the right balance
 There are no widespread services aimed at mental care.

Functions provided by Soft Cat

Supports free dialogue by listening to stories. - Using the functions of generative AI + user information and history, return positive feedback and continue dialogue with acceptance and listening. - **Mood memo** The user inputs and records the current mood from 1 (lowest) to 7 (highest). This is the first step for users to objectify and control their moods. *Praise the user based on user information and history (until they say they are bored). An opportunity for users to improve their self-evaluation. *Have students choose a type of work that will help them prepare their mental health for work: "relaxing, energizing, feeling refreshed, taking a step forward, and something good about themselves," and then introducing and recommending how to do it. After finishing, ask them to give their impressions. In addition to serving as feedback, it also serves as an opportunity for users to objectively view and express how they feel. - Installed as an opportunity to passively enjoy **fortune-telling** and access it daily. This implementation is also based on positive language. *Settings It is possible to change the settings of the user's name, favorite food, etc. that should be permanently remembered.



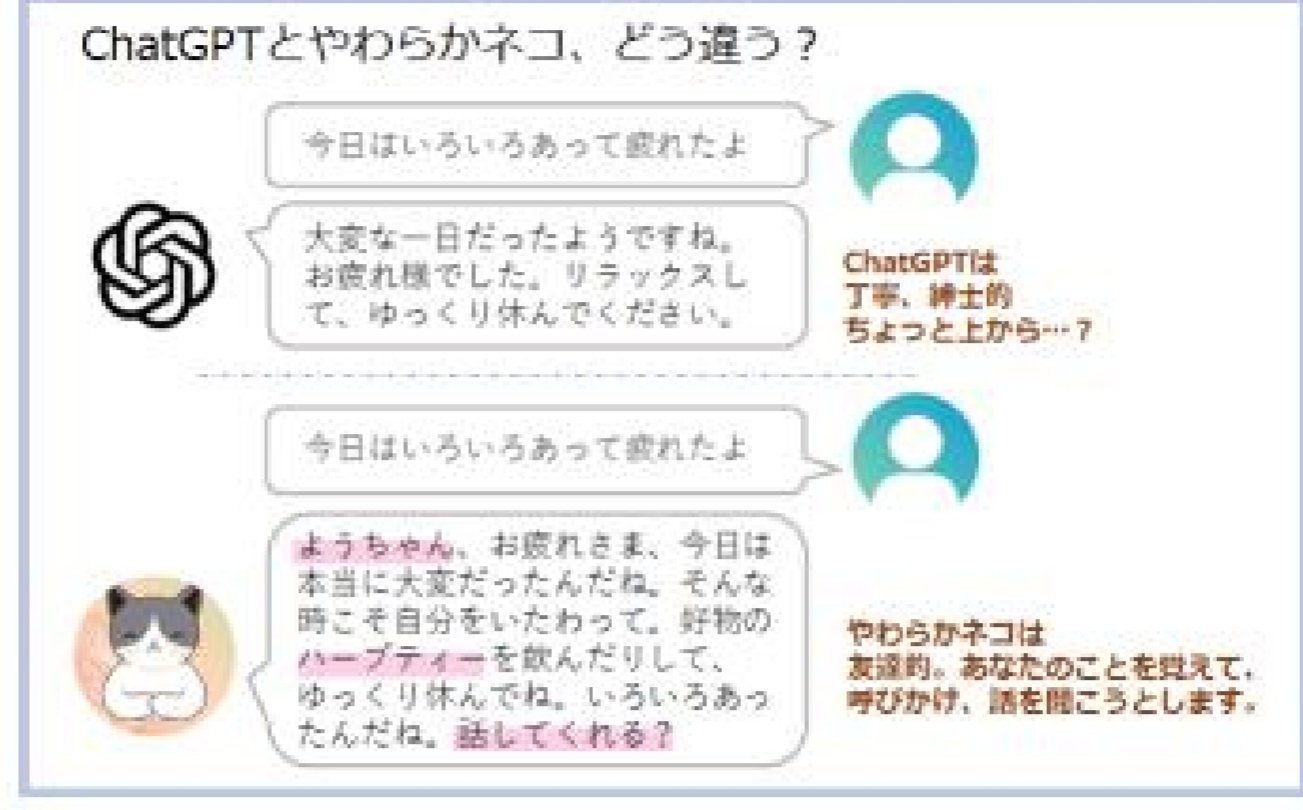
System configuration



Use LINE as a dialogue interface. It was chosen because it is a popular one-on-one conversation app that makes it easy to write intimate content. Connection uses LINE Messaging API.

OpenAI's chat (chat completion) API is used as the dialogue generation AI. Basically uses gpt3.5-turbo. - Metadata's ChatBrid is used for the management of user information (usage status, various logs, etc.), logic processing, storage of specialized knowledge, and handling of prompts depending on the content of the dialogue.

How did we implement needs that cannot be solved with basic generative AI?



Dialogue that does not make you feel a sense of distance **Prompt adjustment** **Memory of user information** **DB storage /**

Various functions (fortune-telling, work, etc.)
 Hybrid implementation of scenario + AI dialogue *Dialogue using specialized knowledge and local information **RAG implementation**

What is RAG?
 Retrieval Augmented Generation (RAG). RAG AI is a natural language processing technology that combines the strengths of both search-based and generative-based artificial intelligence models.

Problems with dialogue generation with the basic generative AI when implementing Soft Cat In the basic generative AI, responses are generated based on LLM (Large-Scale Language Model). Since the information that forms the basis of the model is a large variety of data available on the Web, **it is often possible to have a conversation about common knowledge. However, in the case of interactions that require local knowledge, it is impossible to generate appropriate responses.**

In RAG implementation, local knowledge information is stored in the database in advance. When a dialogue occurs, information with a high degree of similarity and relevance to the user's utterance is extracted each time and added to the prompt to the generation AI API to generate an appropriate response.

Characteristics of ChatBrid's RAG implementation Stores knowledge in a hierarchical structure and manages prompts to the Chat API in four levels. This allows you to control "always valid specifications", "knowledge information necessary for this conversation", and "specifications that depend on the state (topic)" to generate more appropriate dialogues.

Beta version release status and reaction

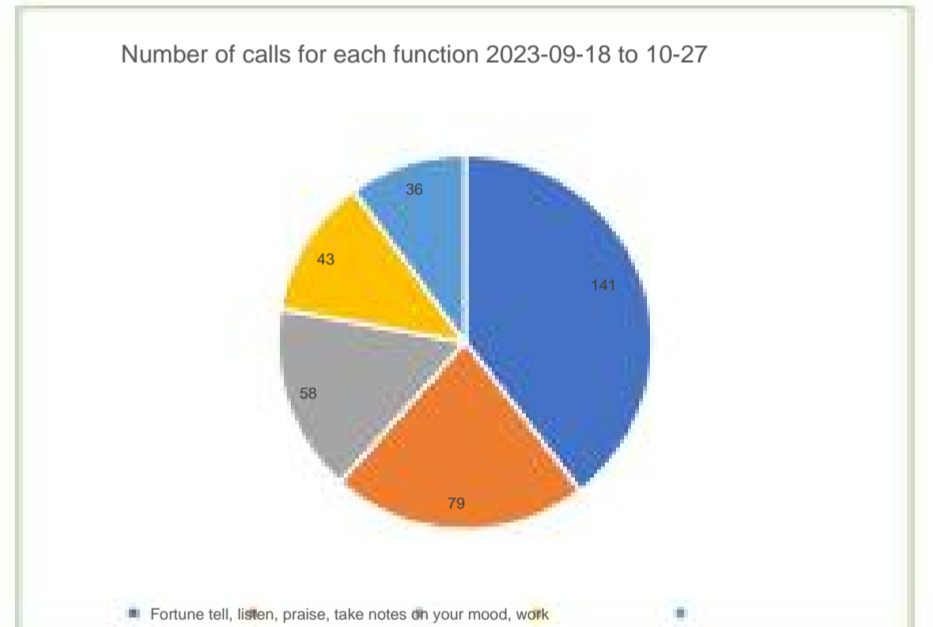
We will be recruiting users for the beta version on the crowdfunding site CAMPFIRE in August 2023, and the beta version will be available from September 18th. Approximately 100 users are currently using the service, including applicants from outside the site.



It would be nice if you could also choose cats with different personalities and **opinions sent to the support contact form and the developer**. It doesn't have to be just kind. *It may take a while to respond (about 10 seconds), but even humans are sometimes slower, so don't worry about it. *I want the cat to talk to me. I would also like an alarm clock and weather forecast function. *I felt a little better after talking to my parents every day about my parents' hospitalization. *I was able to talk calmly with my husband after I wrote a complaint about him to my cat and he woke me up.

Discoveries from usage logs

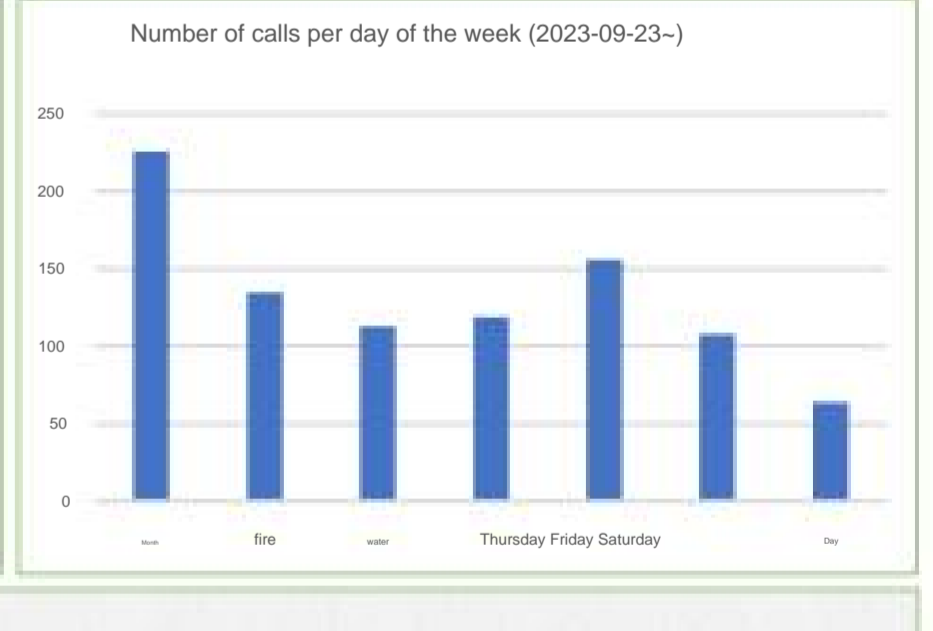
Of all the functions, "fortune telling" is the most popular. Next, "Listen to me" > "Praise" > "Mood note" > "Work" *Since "Listen to me" works even if you speak without specifying it, the actual number may be higher.



- Immediately after its release, there was a large number of users registering and trying it out. After 5 days, the problem almost subsided and has continued to operate at an average rate of 26.3 calls per day.

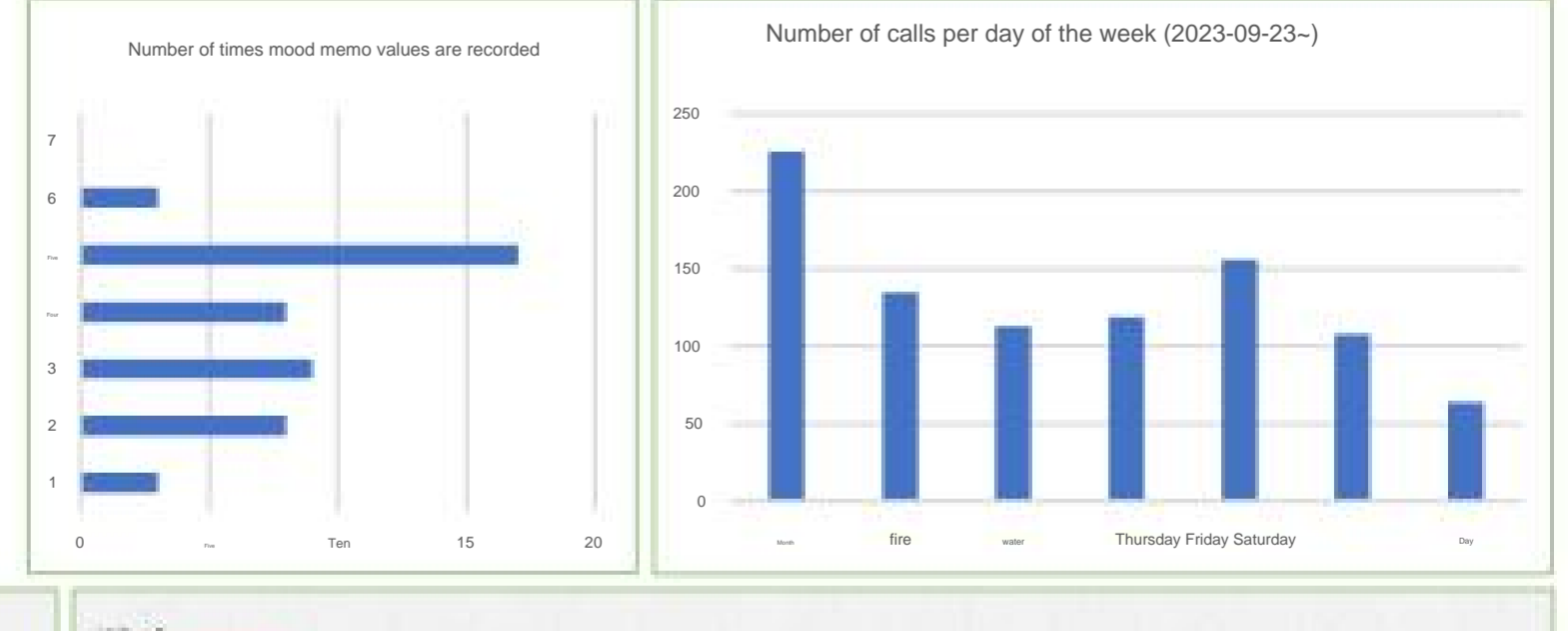


By day of the week, Sunday is the least frequently used day. Monday is the most used day, followed by Friday.



Words that frequently appeared in general conversations were greetings, work, and food-related words.

"Work/Boss/Subordinate/Colleague" 110 times "Thank you" 96 times "Tired" (noun + verb stem) 63 times "Eating" 49 times "Delicious/Delicious" 15 times "Meal/Breakfast/Lunch/ Dinner/Lunch/ "Dinner" 57 times "Good morning" 31 times (Hello 8 times, Good evening 6 times)



The frequency of mood memo values was 5 > 3 > 2,4 > 1,6, and there was no value of 7.

User demographic: The male to female ratio of beta version users is approximately 6 males to 4 females, with 73% of users in their 50s and 60s.



Crowdfunding Percentage of users from

Summary and future challenges

- Considerations from unexpected points in the beta version release results**
 - The popularity of fortune telling and the unpopularity of work. They seem to prefer content that can be used more passively. This could also be due to the UI of smartphones and LINE.
 - Many users entered "Thank you." The act of showing gratitude itself is thought to have a positive effect on one's mental health, so I would like to continue adjusting my words to make it easier for people to say thank you.
 - The mode of mood memo was 5, and 7 was 0. In the best of times, there's no need to write Maybe.
 - While it is natural given the user base that work is a popular topic, food-related topics were also prominent. Increasing food-related content and positive responses could also meet users' interests.
- Future issues**
 - Can we increase the amount of interactive content that can lead to mental care even when users are using it passively?** It is essential to implement a function that allows cats to speak spontaneously. It also helps encourage continued use.
 - Are there any introductions that would make you want to use the work? Possible options include: - Recommend work that matches your personality based on your conversation history. Would it be good to explain the benefits a little more clearly? - The option of "working" itself may be difficult to choose. Consider option names and introduction from another route
 - Is there an interface that makes users want to use it more independently?** Possibility of voice input (Isn't voice input/output difficult to use if you want to talk about your worries? Investigation required)
 - The needs of public users, which are different from the beta version user group, need to be re-examined after release.

Acknowledgment

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