

Beyond Small Talk - Deepen Connections in Existing Relationships

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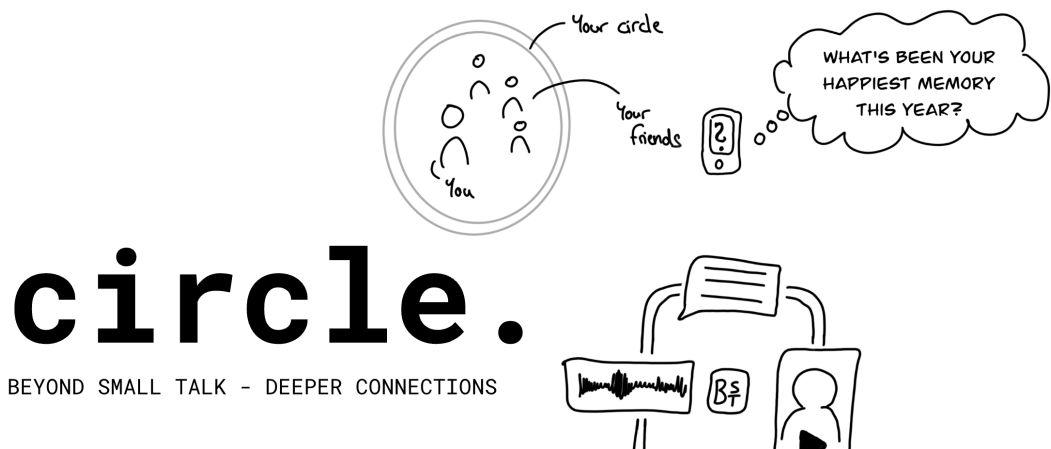


Figure 1: *circle* - proposal for an alternative social interactive system to foster relationships

Abstract

Modern social media platforms create numerous interactions but fail to foster meaningful connections between close friends. Despite constant digital engagement, people struggle with superficial relationships and lack structured opportunities for deeper conversations. We developed "circle," a mobile-first web application that facilitates authentic connections within existing friend groups through scientifically-grounded prompts and balanced participation mechanics. Our platform allows users to form private circles where members receive daily curated questions designed to build emotional closeness. Users respond in flexible formats (currently text and images, with video and audio planned) but can only view others' answers after contributing their own. This "answer first, then view" approach ensures reciprocal vulnerability and prevents passive consumption, mirroring psychological principles of structured self-disclosure. The system combines daily micro-interactions with multimodal expression capabilities. Our approach demonstrates

how social technology can prioritize relationship depth over network breadth. By focusing on existing friendships rather than follower acquisition, circle offers a framework for reimagining social media as a tool for genuine human connection rather than endless content consumption.

CCS Concepts

• **Human-centered computing** → **Human computer interaction (HCI)**.

Keywords

social media, meaningful connections, circle-based networks, reciprocal sharing, multimodal interaction



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1 Introduction

The original purpose of social media was to maintain contact with friends, coordinate events, and occasionally connect with new people over shared interests [15]. Today, however, platforms like Instagram [9] and *TikTok* [16] have evolved in a fundamentally different direction. They have become spaces dominated by consumerism and curated inauthenticity, designed to maximize user engagement through increasingly shorter yet more stimulating content [18]. As a result, users are drawn into absorbing large amounts of superficial content from strangers, which can lead to negative social comparisons and a diminished sense of self-worth due to unrealistic images of what the average person’s life and appearance should look like [5]. Moreover, these platforms offer little incentive for authentic expression or meaningful interaction, reinforcing passive consumption and a growing sense of emotional disconnection [11].

In contrast, other applications aim to foster more personal and focused exchanges. For example, Snapchat [14] supports private and spontaneous communication, while *BeReal* [4] encourages sharing unedited snapshots with friends. *Cappuccino* allows users to send short audio recordings, enabling a more intimate and detailed form of interaction. *Agapé* [1] offers personalized questions intended to spark meaningful conversations, while *Love Every Day* [7] and *Paired* [12] provide prompts, challenges, and tools like synced calendars to enhance communication and intimacy between couples. Collectively, these platforms address the shortcomings of mainstream social media by promoting authenticity, reducing passive consumption, and improving existing relationship bonds.

Inspired by these approaches, we developed *circle*, a mobile-first web application in which users create small groups, referred to as “circles”, and respond to daily prompts in either text or photo form. These prompts, which may include questions about shared memories, future aspirations, or personal preferences, are designed to deepen the emotional connection between our users. To ensure mutual participation, responses from others become visible only after one has submitted their own. Our concept is intentionally not limited to romantic relationships but extends to a broad range of social contexts, including friend groups and professional work teams.

Testing the prototype with our group of five students demonstrated that active participation could foster a deeper connection in a remarkably short period of time. Questions about favorite places or recent dreams served as effective icebreakers, enabling a level of openness and familiarity that would likely not have been achieved through casual conversation alone. More personal debates stimulated both self-reflection and curiosity, and we found ourselves genuinely invested in one another’s responses. In this way, *circle* has the potential to promote healthier digital habits, increase real-life participation, and help users reconnect with both themselves and others.

This report outlines the conceptual and technical development process of the *circle* application prototype. Section 2 describes our methodology, Section 3 presents the results of initial testing, and Section 4 provides a discussion of challenges encountered, potential improvements, and future development directions. Section 5 concludes with a summary and final reflections.

2 Methodology

The following section explains the methods applied to set up the *circle* prototype, starting with the scientific foundations shaping its underlying concepts (2.1), followed by the compilation of the question catalog (2.2), the app’s core functionality, which defines both the quantity and depth of user engagement. It then examines the design planning, with particular attention to usability and user experience (2.3). Finally, the technical implementation is described (2.4), including the system architecture, frontend and backend development, and data management.

2.1 Scientific Background

Our project guideline was to rethink social media and communication systems with the aim of improving people’s social relationships and overall well-being. We therefore chose to design an app focused on deepening existing relationships rather than encouraging numerous but often superficial ones. Accordingly, the core concepts of *circle* are: (1) the use of structured prompts to lower communication barriers and encourage meaningful self-disclosure; (2) daily check-ins to build consistency and emotional resilience; (3) reciprocal participation to ensure balanced engagement; and (4) flexible, multimodal input options to support creativity and autonomy.

Each of these principles is supported by scientific research. (1) A foundational framework for the first concept is the Closeness-Generation Model, a psychological method developed to create temporary yet meaningful interpersonal closeness between strangers in a controlled laboratory setting. In this model, structured self-disclosure questions helped significantly increase emotional intimacy and trust between participants [3]. A similar approach is described in [6], where therapist-developed conversation cards successfully encouraged open and reflective dialogues. Together, these studies demonstrate that curated prompts can facilitate discussions about emotionally significant topics and foster a sense of connection by guiding participants through shared, meaningful reflection. (2) Research on digital tools specifically designed to nourish interpersonal bonds supports the importance of daily interactions. For example, *Love Every Day*, an app offering daily, habit-forming prompts, has been shown to boost emotional connection and resilience between its users [8]. This finding also indicates that small but consistent micro-interactions improve relationship quality and stability, also for long-distance couples [8]. (3) Similarly, surveys on users of the *Paired* app report measurable improvements in relationship satisfaction, with participants valuing affirmations and real-life couple challenges [2]. These results highlight that reciprocal participation and thoughtful prompt design are critical to sustained engagement. (4) Finally, flexible response formats, whether text, images, or other modalities, provide users with autonomy and creative freedom, which prior research suggests increases both perceived benefit and long-term use [2].

By grounding its design in those principles, *circle* aims to strengthen users’ connections both with each other and with themselves. Importantly, since these dynamics are not limited to romantic partnerships, the app is intentionally designed for diverse relational contexts, including friendships and work teams, with the goal of fostering stronger, more resilient bonds across different relationship types.

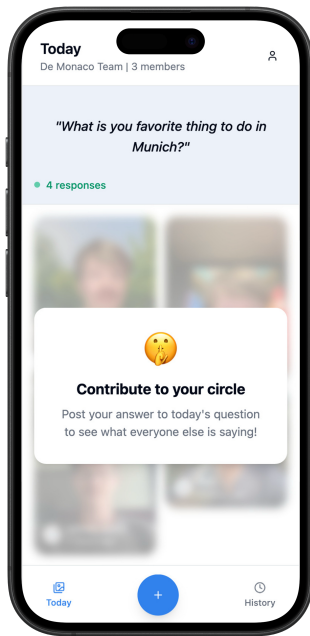


Figure 2: Screenshot - Daily Greeting Screen

2.2 Question Catalog Compilation

Building on the psychological and digital engagement principles outlined in Section 2.1, an additional source of inspiration was the card game *We Are Not Really Strangers* [17], in which players respond to questions ranging from light, introductory prompts to deeper, more emotional ones. This format translates many of the underlying scientific insights into playful practice. Drawing on this approach, the question catalog was identified as our central feature, and its careful compilation allows us to shape both the quantity and depth of user interactions. As shown in Figure 2, users encounter daily prompts in a clean, focused interface that emphasizes the question while maintaining anticipation for others' responses.

To foster hybrid on- and offline connections, the catalog includes prompts about shared memories, weekend plans, and travel goals, encouraging users to carry conversations into in-person settings. More personal prompts address emotions, behaviors, and influences, guiding users toward self-reflection and meaningful self-disclosure.

Examples include: "When was the last time you felt truly alive?", "Is there a ritual that helps you through hard times?", or "What do you find most beautiful about yourself?", sourced from everyday life, podcasts, and media. The catalog is further tailored to the type of relationship within each circle, ensuring thematic relevance and emotional depth for friendships, couples, and work teams. In professional contexts, prompts emphasize collaboration, highlighting common strengths and weaknesses, shared goals, or team-building measures. Overall, the question catalog is designed to enhance relationships, strengthen group cohesion, and shift attention away from curated online personas toward authentic self-expression and meaningful, real-world connections.

2.3 Design

To realize this experience, *circle* offers a concise but purposeful set of features. Users can register via email, phone, or *OAuth*; create private circles; invite friends via shareable links or direct search; join circles upon invitation; and manage or leave memberships with ease. The app delivers daily prompts and, for those who have participated, a daily summary to keep engagement intentional but never overwhelming. Responses can be submitted in any of the supported formats, and past answers remain accessible for reflection at any time.

Turning this concept into a tangible experience began with the creation of a complete user flow diagram (see 3), connecting every feature into a seamless journey. This mapping exercise ensured that the platform's guiding principles, naming authenticity, simplicity, and deep connection, translated directly into the user experience. From there, early visual prototypes were developed in *Figma*, informed by both application and UX research, as well as the layout-related strengths of similar, already successful platforms. To give an example, the daily summary visualization was inspired by both whiteboard tool like *Miro* [10] and *Pinterest* [13]. This allows for a more engaging layout than the widely used news feed. In *Figma*, the Simple Design System was chosen as the visual foundation, offering reusable components that could easily translate into code during implementation. These screens did more than visualize the interface, since they became a basis for discussions about the direction of the app, a tool for refining navigational structures, and a reference for defining interactive behaviors. In this way, the design process not only shaped the appearance of *circle*, but also reinforced its commitment to creating a digital space where genuine friendships can grow through intentional, shared experiences.

2.4 Technical Implementation

This section details the technical implementation of the concepts and design choices outlined above. It covers the architectural overview (2.4.1), frontend and backend implementation (2.4.2, 2.4.3), the data persistence layer (2.4.4), as well as the data model and flow (2.4.5).

2.4.1 Architecture Overview. From an architectural point of view, we decided to choose the very common three-tier architecture pattern in order to implement our web application. These three tiers comprise the frontend, backend, and persistence (database and storage) layers. This separation ensures modular development, scalable deployment, and ease of maintenance across the system. Another early decision was to build a mobile-first web application for two reasons: (1) it offers cross-platform compatibility out of the box and (2) the users are expected to use our project with their smartphones. This enables optimal usability and responsiveness on a variety of devices and makes it accessible and user-friendly by default.

2.4.2 Frontend Implementation. The frontend uses a modern tech stack including *TypeScript*, *React*, *Vite*, and *TailwindCSS* to create engaging pages. The web application offers several UI views and interactive components:

- **Today Feed:** Displays the daily question, designed to encourage user engagement and deepen the relationships between the members of the circle.

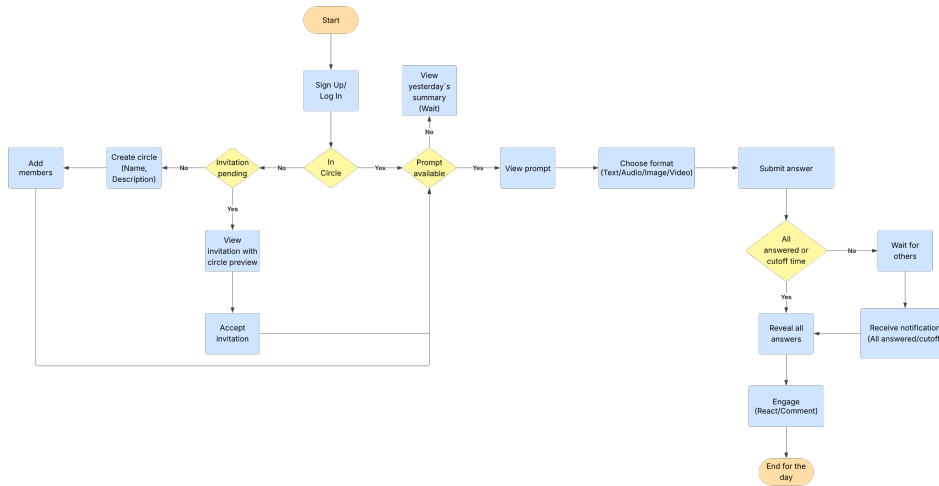


Figure 3: User Flow Diagram

- History Archive View: Allows users to browse previously answered questions and discussions across their circles.
- Profile View: Provides user-related settings and information.
- Upload Modal: Enables users to upload media to the daily prompts, integrated with backend storage.

The multimodal response interface (Figure 4) demonstrates how users in the current version can flexibly choose between text and image responses, supporting diverse expression styles while maintaining the app’s focus on meaningful content.

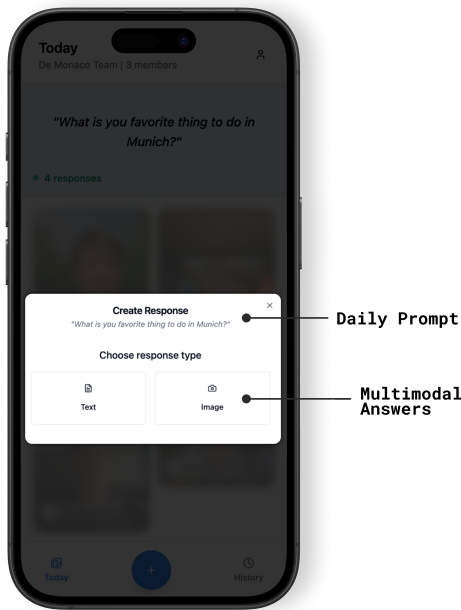


Figure 4: Screenshot - Multi-modal-answer Interface

2.4.3 *Backend Implementation.* An authentication and authorization system was implemented to manage user identities, roles, and secure access. This part handles user login, account creation, and access control for private or group content. Our custom question engine assigns daily questions to each circle. These questions are selected from categorized pools and delivered based on the associated category of the circle. These categories include friends, couples, and work teams and vary, as mentioned, from questions about everyday life, future visions, self-reflection, and memories. The backend was realized by using *Python* and *FastAPI*.

The backend was integrated with a file storage system to handle user-uploaded media. The system maps storage objects to database entries through a well-defined schema, ensuring referential integrity and retrieval capabilities. For file storage, we use *Supabase*, as it offers a very generous free tier that we can experiment with. Next to *Supabase*, we also have a *PostgreSQL* database running in the persistence layer, which will be described in the next section.

2.4.4 *Data Persistence Layer.* As stated previously, the project uses *Supabase* and *PostgreSQL*. The *PostgreSQL* instance serves as the relational database, managing most of the structured data such as users, circles, questions, and answers to the daily prompts. The *Supabase* storage is only used for handling file uploads and providing secure and performant access. *Supabase* enabled us with rapid prototyping capabilities due to its out-of-the-box functionalities.

2.4.5 *Data Model and Flow.* Our application’s core entities include users, circles, questions, and answers, structured to support social interactions. Users represent registered members who can participate in multiple circles simultaneously. Circles are private social groups created by users, each associated with a specific question category (i.e., friends, couples, or work teams) that determines the type of prompts delivered. The *circle_members* table manages the many-to-many relationship between users and circles, enabling flexible group membership. Questions are organized by category and scheduled for delivery to circles based on their relationship type. This categorization ensures thematic relevance, providing targeted prompts that match the group’s context, whether it is casual

friendship conversations, intimate couple discussions, or professional team-building exercises. Answers link users, questions, and circles together, capturing individual responses within the group context.

The application follows a structured data flow through the following sequence:

- (1) **Authentication:** Users log in or register, with credentials securely stored in *PostgreSQL*
- (2) **Circle Management:** Users create or join circles, updating the *circle_members* table and establishing group associations
- (3) **Daily Question Delivery:** The backend selects category-appropriate questions and delivers them to circle members
- (4) **Response Collection:** Users submit answers asynchronously, which are stored and mapped to the relevant user, circle, and question
- (5) **Media Handling:** File uploads are processed through the Upload Modal, stored via Supabase Storage, and linked through the database schema
- (6) **Content Revelation:** Responses become visible to other circle members based on participation rules

3 Results

The prototype was tested by a group of five students in their mid-twenties over a period of two weeks prior to project submission, as well as with a romantic couple to explore its applicability across different relational contexts. During this period, participants showed consistent motivation to provide responses and view those of others. The fact that prompts were pre-defined, rather than user-generated, lowered the barrier to participation and made daily engagement straightforward and enjoyable.

Across both test groups, prompts effectively stimulated interaction and reflection. Questions such as “What is your favorite festival close to Munich?” led to planning new activities, while prompts about travel experiences encouraged reflection on past events. Compared to weekly in-person seminar meetings or brief *WhatsApp* exchanges, which were typically limited to organizational matters, the app facilitated a noticeably deeper understanding within the student group. In the couple setting, prompts like “What do you like most about me?” fostered affirmation, empowerment, and closeness. The once-daily interaction format was considered a strength in both contexts, as it prevented the experience from becoming overwhelming while maintaining regular contact.

Participants also emphasized the value of flexible media input. Uploading images from the media library was often more practical than taking spontaneous photos, particularly when prompts required content not easily captured in the moment. Whether spontaneous or selected, shared photos often prompted follow-up conversations in person, enabling more detailed discussions and reinforcing offline connections. In this way, the app demonstrated potential to bridge digital and face-to-face communication.

At the same time, several avenues for improvement were identified. Suggested enhancements included expanding response formats to voice messages or videos, adding a private chat function for direct exchanges, and broadening circle categories, for example, a journal

mode for private self-reflection or a family mode for intergenerational interaction. Further possibilities include adapting the concept to dating platforms, where structured prompts could smooth more meaningful first encounters, and integrating AI-generated prompts that adapt dynamically to user responses. However, the latter would require careful consideration of ethical and data protection issues.

Overall, *circle* integrates several positive aspects of existing social media platforms. It combines the spontaneity of *BeReal* and *Snapchat*, the quick glimpses into friends’ lives provided by *WhatsApp*, and the inspirational elements of Instagram, while avoiding the endless scrolling and superficial interactions typical of mainstream platforms. Many prompts encouraged introspection as well as discovery, inspiring participants to explore new activities such as visiting places, trying recipes, or reading books. Collectively, these findings suggest that *circle* can foster authentic engagement, strengthen interpersonal connections, and encourage meaningful offline interactions.

4 Discussion

A key challenge for the long-term success of *circle* will be sustaining user engagement beyond the initial phase of enthusiasm. As with many applications that require active participation from all members, it can become frustrating if some participants stop responding, whether because they no longer find suitable answers or because, after a long day, they simply prefer passive entertainment. Comparable platforms such as *Snapchat*, which in theory offer fewer features than *circle*, mitigate this problem by allowing users to post freely without being tied to predefined prompts. While *circle* users could choose not to respond to prompts, doing so would undermine the app’s core concept of shared, structured interaction. Additionally, *circle* currently only allows one contact per day in each circle.

Another important consideration, both conceptually and technically, is determining the maximum number of members allowed per circle. A smaller limit, for example, ten members, would prevent scenarios in which influencers attempt to use the app to interact with large communities, as is possible on Instagram, where a single person can address several thousand followers while being the only one posting in a somewhat “private” chat. However, this approach is incompatible with *circle*’s original design philosophy, which discourages one-sided and superficial exchanges. Conversely, allowing larger groups increases the risk of diluting the depth of conversation, which *circle* explicitly aims to avoid. Furthermore, users’ willingness to pay for a new app (e.g., in the form of a subscription) is very low. Therefore, it would likely have to be financed through advertising, which also goes against our core concept.

Beyond user engagement challenges, technical considerations include content moderation for inappropriate responses, data privacy protection given the intimate nature of conversations, and scalability concerns as user bases grow. The app’s success also depends on cultural factors—whether users genuinely value deeper connections over passive consumption, and whether the structured prompt format can maintain novelty over extended periods.

5 Conclusion

This report on the development of the *circle* prototype demonstrates that digital communication tools can be intentionally designed to prioritize the depth of existing relationships over the breadth of connections. Drawing on established research on self-disclosure and relationship building in both online formats (e.g., apps) and offline contexts (e.g., card games, structured conversations), *circle* integrates daily curated prompts, multiple response formats, and a reciprocal participation mechanism to create structured opportunities for meaningful conversations within small groups. The approach seeks to counteract the passive consumption patterns typical of mainstream social media and instead foster active, intentional engagement.

Initial testing within a small user group indicated that even brief, once-daily exchanges could prompt self-reflection, strengthen emotional closeness, and inspire in-person conversations. The closed-group structure and “answer before view” principle proved effective in ensuring mutual participation, while the limited frequency of prompts maintained a balance between regular contact and minimal screen time.

However, sustaining long-term engagement and determining optimal group sizes remain important challenges for future development. Potential enhancements include expanding media response options, diversifying circle categories, and introducing additional interaction features such as commenting or direct messaging. By demonstrating that structured, reciprocal interaction can foster genuine connection in digital spaces, *circle* challenges the dominant paradigm of attention-capture social media. Rather than competing for user engagement through algorithmic feeds and endless scrolling, the prototype suggests an alternative model where technology serves human relationship needs directly. If scaled thoughtfully, such approaches could fundamentally shift how social platforms balance user well-being against engagement metrics, pointing toward a more intentional and emotionally sustainable digital future.

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A Character Count

This work contains 22498 / 20.000-30.000 characters.

B Additional Links

- **Project Code:** <https://github.com/tudi2d/psib>
- **Video:** [Demo Video](#)

C Contribution Statement

Philipp Hugenroth

Technical architecture lead, frontend development (React/TypeScript), system integration, deployment, and overall technical coordination.

Jonas Süß

Backend development (Python/FastAPI), API design, database implementation (PostgreSQL), authentication systems, and data architecture.

Louisa Ullmann

Scientific research foundation, question catalog development, psychological research integration, and lead report writing.

Lisa Längrich

UX research, user flow design, interface and screen design, and usability testing.

Niko Pallas

Project management, documentation, UX research, concept formalization, and support in all other segments.