

BingeBuddies: A tool to enhance collaboration and debate for watching content together

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Abstract. In the age of digital media, people have a difficult time deciding on what to watch, listen to or even to read, it is even more blatant when it comes to a group of people. With the overwhelming volume of content available and limited time, people increasingly rely on recommendation algorithms, which are not always satisfactory. Geographical distance may also get in the way of shared viewing experiences. Teleparty and Amazon Prime Watch Party attempt to bridge this gap, but lack functionality that facilitates decision-making. To solve this issue, we developed BingeBuddies, a collaborative app to help groups make quick decisions about what to watch. By conducting interviews, we determined that there was a shared issue of indecision and discontent with current streaming recommendations. We started with a low-fidelity paper mockup and gathered feedback, which focused on further clarity for host privileges and greater limitations on the in-app chat during playback. We incorporated these feedbacks into a high-fidelity version built with Draw.io. Our research process also included a literature review using Google Scholar and user testing with 11 participants in small groups, between 2 and 3 individuals per group. During these sessions, one user engaged with the platform by creating group chats, inviting others and creating voting sessions. Besides technical issues, results showed that the app was easy to use and made decision-making possible within under three minutes.

Keywords: Tele-party, Movie, TV show, Video Content, Streaming Platform, Vote system, Recommendation system, Group chat

1 INTRODUCTION

The rise of digital streaming platforms has revolutionized media consumption, offering vast content libraries.

BingeBuddies is an interactive platform designed to streamline this decision-making process. By implementing a structured voting system and AI-driven recommendations, it enables groups to reach a consensus efficiently. Users can set filters based on preferences and available streaming platforms, participate in a multi-round selection process, and utilize features like the "super dislike" veto to eliminate strongly opposed options. Additional functionalities, such as synchronized playback, interactive chat, and AI-powered wake-up detection, enhance the group viewing experience.

By addressing the inefficiencies of content selection, BingeBuddies transforms group media consumption into a seamless and enjoyable activity, reducing conflicts and ensuring an engaging experience for all participants.

2 RELATED WORK

The challenge of group decision-making has been widely explored in the literature, particularly in the domains of voting systems, collaborative filtering, and consensus-building. Our work, BingeBuddies, aims to enhance the process of selecting movies for group viewing by incorporating a structured voting system that streamlines decision-making and fosters engagement. This section reviews relevant literature that informs our approach.

The concept of structured decision-making in groups has been extensively discussed in Butler and Rothstein's [4] work on Formal Consensus. Their study highlights the importance of democratic and cooperative decision-making, outlining methods such as brainstorming, polling, and structured discussions to reach agreements while ensuring active participation. These principles guide the design of our voting system by providing strategies to resolve disagreements and encouraging inclusive group participation.

The process of making collective decisions is central to our application, and voting theory offers insights into how different systems influence outcomes. Nurmi's [2] research on voting systems for social choice compares various methods such as plurality voting, Condorcet methods, and approval voting. It emphasizes how different rules impact results and discusses strategic voting behaviors, which are relevant to our platform, where users might vote tactically to influence the final decision. Our system adopts a majority-rule approach with a randomized resolution in case of ties, aligning with findings that simple majority methods enhance usability in decision-making applications.

Movie recommendation engines often rely on collaborative filtering (CF) techniques to predict user preferences based on similar tastes. Schafer et al. 's [1] study on CF-based recommender systems explores user-based and item-based filtering, addressing challenges such as sparse data and scalability. Similarly, Masciari et al. 's [3] work on AI-driven recommendation systems and Modi et al. 's [6] study on movie recommendation frameworks emphasize the role of social influence and temporal dynamics in improving recommendation accuracy.

Since BingeBuddies facilitates real-time movie streaming and group interactions, understanding the technical challenges of streaming systems is essential. The research on video streaming by Apostolopoulos et al. [7] provides an overview of core technologies, such as compression techniques and dynamic bandwidth allocation, which are critical for optimizing our platform's performance. Furthermore, chat functionality is a key feature of our app and Dewes et al. 's [5] studies on internet chat systems highlight best practices for real-time messaging, addressing latency and protocol selection challenges that inform our chat implementation. Their findings inform our approach to building a responsive and reliable chat system that supports real-time engagement among users.

Social interactions significantly influence engagement in group movie-watching experiences. Research on pre-viewing discussions and brain synchronization like Rigby et al. 's [10] shows that individuals who engage in conversations before watching a movie exhibit greater neural alignment, leading to improved shared experiences. This finding supports the integration of chat features within BingeBuddies, encouraging pre-movie discussions to enhance group cohesion. Additionally, studies on screen size and immersion by De Felice et al. [9] indicate that viewing experiences vary across devices, suggesting that our app may benefit from optimizing settings for different screen sizes to maintain engagement levels.

Beyond traditional recommendation approaches, some research like Chu et al. 's [8] explores movie selection based on users' real-life experiences and emotional context. By considering factors such as mood and past experiences, recommendation systems can offer more meaningful suggestions. This perspective could be integrated into future iterations of BingeBuddies, allowing for a more nuanced selection process that goes beyond popularity-based recommendations.

The studies reviewed provide valuable insights into the design and implementation of BingeBuddies. By leveraging research on consensus-building, voting systems, recommendation algorithms, streaming technologies, and social interaction dynamics, our platform aims to create a seamless and engaging group decision-making experience for movie selection. Future enhancements may incorporate AI-driven recommendations and refined voting mechanisms to further improve usability and user satisfaction.

3 DESIGN PROCESS

3.1. Initial brainstorming

The design process for BingeBuddies began with an exploratory brainstorming session. This session aimed at identifying a research topic. After evaluating the feasibility and potential user demand for each concept, the team decided to focus on a common everyday problem, decision-making issue in group settings about video content watching. To solve this problem, the team imagined the development of a collaborative movie selection platform. This decision was driven by the recognition that choosing a movie within a group is often a source of friction due to diverse preferences and an overwhelming number of content options.

3.2. Interviews

To gain insights into the challenges associated with group content selection and to refine the BingeBuddies platform, we conducted a series of semi-structured interviews with individuals who frequently engage in group movie-watching sessions. The primary objectives of these interviews were to identify common pain points, assess current decision-making strategies, and gather user preferences regarding features that could facilitate the selection process.

Participants were recruited based on their experience with group content selection. The sample included individuals from diverse backgrounds, including university students, couples, and families, who regularly watched movies together. This purposive sampling approach ensured that participants could provide relevant insights into the frustrations and inefficiencies they encounter during the selection process.

Each interview was conducted in a semi-structured format, allowing for both predetermined questions and flexibility to explore emergent themes. The sessions were held either in person or via video calls and lasted approximately 20–30 minutes. Participants were asked about:

- Their typical process for choosing a movie in a group setting
- The main difficulties they face when reaching a consensus
- Their experiences with existing decision-making tools, if any
- Features they would find useful in an application designed to streamline this process
- Their willingness to engage with AI-based recommendations and voting systems

The interviews revealed several recurring challenges in group content selection. Many participants experienced decision fatigue due to the overwhelming number of choices available on streaming platforms, often leading to prolonged discussions and, in some cases, the abandonment of the activity. Conflicting preferences among group members further complicated the decision-making process, with some enjoying debates while others found them frustrating and time-consuming. Participants also noted that existing solutions, such as streaming platforms' recommendation algorithms, were inadequate for group decision-making, as they primarily catered to individual viewing habits rather than collective preferences. Additionally, most users expressed hesitation towards rating systems, finding them tedious and unnecessary, which led us to exclude rating-based recommendation features from our design. Finally, users expressed a strong preference for a structured and efficient decision-making process that would streamline content selection, minimize disagreements, and reduce wasted time. Features such as multi-round voting, veto options, and AI-generated shortlists were particularly well received, reinforcing the need for a collaborative and organized selection tool.

3.3. Sketches

As part of the early design process, the team developed a series of sketches to explore and visualize the user interactions during the voting phase. These initial drawings served as a foundation for ideation and helped the team to clarify how the system would facilitate group decision-making. The voting process is initiated by a host, who would apply a set of pre-selection filters to generate a tailored list of movies. These filters aim to select a list of platforms like Netflix, Prime Video, Youtube and so on and also a list of genres. Participants could then join the session and vote for as many movies as they wanted. To address situations where there is a majority on a movie but one person in the group hates this movie very much, we introduced the “super dislike” feature. It allows each user to put a veto on a movie. This veto can only be used once per vote session. If a movie received a majority, it would be selected; otherwise, a second voting round would be triggered, excluding veto options and carrying over top-rated choices alongside new suggestions. The goal was to design a voting process that will create a consensus on something that the most people will like and less people will not like. These sketches laid the groundwork for the future paper prototype and informed several of the key interaction mechanisms later implemented.

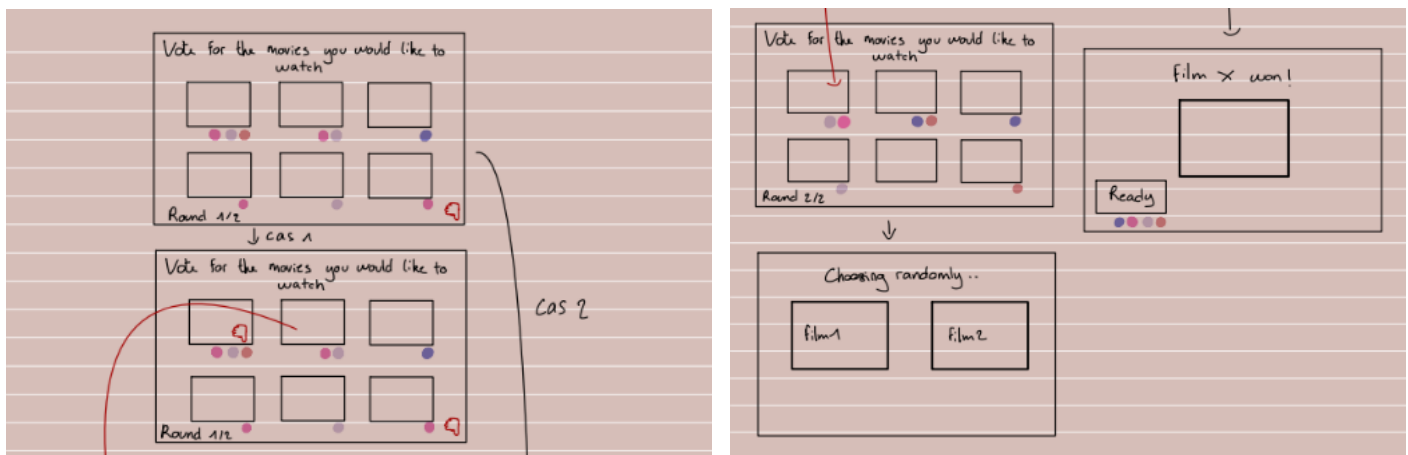


Figure 1: Sketches that represent the voting process

3.4. Paper prototype

Our team made a paper prototype to illustrate and test the core functionalities of the application: log-in the application, creating a group chat, send a message, create a voting session, choose the filters, vote for a movie, super-dislike a movie, press play/pause, show/hide the chat during a movie, play a mini-game and wake up a watcher that is falling asleep.

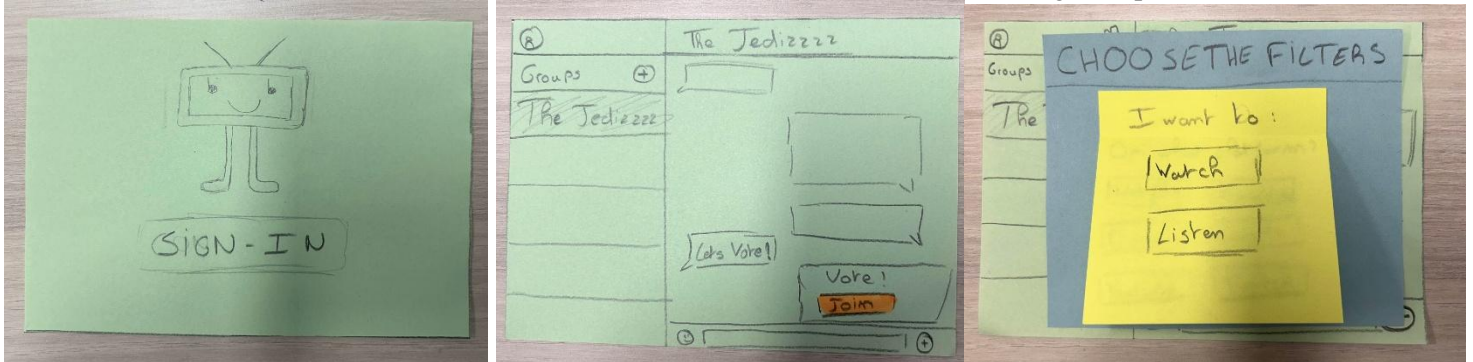


Figure 2: Paper prototype screens

3.5. User workshop

To better understand user needs and refine the design of BingeBuddies, we conducted a user workshop using a paper prototype. Participants were guided through key interactions, including setting filters, voting on content, and engaging in group chat during a viewing session. The workshop provided valuable insights into usability and feature expectations.

Based on the feedback gathered, several design improvements were implemented. Participants expressed confusion about the intended platform, mistaking it for a TV interface rather than a computer-based application. As such, we clarified visual cues to better indicate the platform context. Moreover, users noted that it was unclear who had control over setting filters. To address this, we added clearer indicators showing that only the host has access to filtering options when creating a vote.

Other feedback led to the introduction of additional features aimed at improving usability and reducing disruptions. A confirmation step was added before finalizing votes, helping users avoid accidental selections. We also introduced limitations to the chat feature during viewing sessions to limit distractions and maintain focus on the shared content.

3.6. High-fidelity prototype

To validate and refine the proposed interaction model, a high-fidelity prototype was developed using Draw.io. This prototype included interactive components, enabling users to simulate key functionalities such as navigating through the interface, initiating a vote, applying filters, and participating in the movie selection process. The use of interactive elements provided a realistic approximation of the user experience and facilitated targeted usability testing. Informal testing sessions with participants allowed the team to identify and address issues related to navigation or interface clarity. Feedback from these sessions informed several iterations of the design, ultimately contributing to a more intuitive user interface. However, this prototype was not online so it was impossible to simulate a group session with it and have a real result of the effectiveness of the app. The goal was more to identify issues and improvements on the interface itself.

3.7. Research method for the literature review

To enhance our understanding of the project, its challenges, and potential areas for improvement, we conducted a literature review focused on research and work related to the BingeBuddies app. Since this app covers multiple domains and offers many opportunities for enhancement, we concentrated on key functionalities to guide our research. Specifically, we focused on decision-making in group settings (relevant to the voting feature), recommendation systems (for suggesting movies), video streaming, co-watching, and screen size considerations, as the app runs on desktop.

These focus areas helped us define relevant keywords to guide our search for sources. For video streaming and screen size, we used terms such as “movie,” “TV show,” “video content,” “streaming platform,” “Netflix,” and “screen size.” For group decision-making, we searched for keywords like “voting system,” “decision-making,” “negotiation,” and “agreement.” In the recommendation system category, we included terms such as “recommendation system,” “streaming platform,” “AI,” and “recommendation algorithm.” Finally, for co-watching features, we searched with keywords like “group chat,” “watching together,” and “watching online.”

Our research was conducted primarily through Google Scholar, from which we compiled an initial list of ten papers. Each team member was assigned two papers to read, analyze, and summarize. These summaries were then presented and discussed within the group. This collaborative exchange enabled us to refine our selection, replacing some papers with more relevant ones, and ultimately finalizing a list of ten papers that collectively address the key aspects of the BingeBuddies app.

4 USER EXPERIENCE

4.1. BingeBuddies prototype

The prototype used for the user experience evaluation of the BingeBuddies app was a web-based application developed with Next.js 14 and MongoDB as the database solution. The application was hosted on Vercel using its free tier service, with server location based in Ireland. This technology was selected to support the real-time user interactions.

Given the collaborative purpose of the BingeBuddies app, where users must engage in group decision-making, real-time messaging, and synchronized video, a web application was determined to be the most optimal format. Web technologies enabled consistent functionality across various devices and operating systems, simplifying access for users during the testing sessions.

Despite the benefits of this architecture, certain limitations arose due to the hosting constraints. Hosting on Vercel's free tier, geographically located in Ireland, introduced latency for users with bad internet connections. This resulted in small delays in user input and temporary unresponsiveness of the interface.

To reduce the impact of these issues, the team implemented an architecture, where most of the processing was directly on the user's computer to reduce server load, the server only receives and emits events. This method greatly decreases reliance on internet speed, but the problem is not 100% solved.

The prototype offered a set of features to simulate the group viewing experience and support the evaluation tasks. These included:

- User Authentication: A login and account system allowing participants to create profiles.
- Group Creation and Management: Users could create and join viewing groups.
- Real-Time Chat: An integrated chat system allows synchronous text communication between participants.
- Multimedia Support: The chat supported image sharing to simulate natural conversation flow.
- Voting System: Structured, multi-round voting enabled decision-making on movie choices, with a "super dislike" veto option.
- Synchronized Viewing: The application allowed participants to watch video content simultaneously, with synchronized controls for play, pause, and exit actions.

This prototype reflected the envisioned BingeBuddies experience and provided a robust environment for evaluating both the usability and the effectiveness of its key features.

4.2. Protocol

The purpose of the user experience protocol created for the BingeBuddies app evaluation was to see how well its features supported group decision-making during online video content viewing. The study was designed as an experimental evaluation combining both quantitative and qualitative data collection methods.

Participants were recruited through social media, personal networks, and university channels. Eligibility was restricted to individuals aged 18–30 who frequently watch movies in groups and often experience challenges in content selection. Participants also had to have access to a streaming platform and an internet-connected computer. Those who primarily watch content alone or lacked technical access were excluded.

Upon consent, participants were briefed on the purpose of the app and its core functionalities. The evaluation was conducted in person using the BingeBuddies prototype. Each session involved small groups (where members were already acquainted) following a standardized set of tasks designed to mimic a typical movie night scenario.

The key tasks included:

- Creating an account
- Creating and joining a group
- Sending and accepting invitations
- Initiating and participating in a multi-round voting session
- Using the “super dislike” veto feature
- Sending messages via the integrated chat
- Interacting with the video player (play, pause, exit)

One participant per group was randomly assigned to a specific role who created the group chat, sent invitations and created and hosted the vote session. A short placeholder video was used during the session to test in-app features.

Data were collected both during and after the session. In the research team each person had a role during the experiment. These roles were used in particular for the data collection (stopwatcher, note taker, IT technician, explainer). Data collected includes behavioral metrics such as decision-making time, number of voting rounds and number of errors/bugs. Following the session, participants completed an online questionnaire to provide subjective evaluations of usability, satisfaction, and perceived group efficiency.

All collected data were anonymized and securely stored, with participants informed that they could withdraw at any time. Data access was restricted to authorized members of the research team.

In addition to providing a uniform user experience for all participants, this approach allowed to gather comprehensive data that could be used to show how BingeBuddies affected group decision-making and also help the team to imagine and design future improvements.

4.3. Findings

This section presents the results from the user experience testing conducted on the BingeBuddies prototype, designed to streamline group decision-making processes for movie selection. Feedback was gathered via user questionnaires and direct observation notes during the testing sessions.

Overall, participants found the BingeBuddies app interface moderately intuitive. Most users rated ease of navigation positively, although some indicated difficulties in understanding the process for creating and joining voting sessions. Participants specifically highlighted issues with the clarity of instructions for initiating voting sessions and visibility of critical app features, such as the "start voting" button.

Technical issues were observed, involving lag and delayed responses. Users experienced delays during account creation, initiating voting sessions, and transitioning between voting rounds. Specifically, group 2 faced lags during voting session creation and sign-up, group 3 required manual page refreshes to get into the second voting round, and group 1 reported brief lags during the voting process.

Participants effectively used the integrated chat during the voting process, and this feature received positive feedback for enabling transparent and real-time communication.

Most groups felt that two voting rounds were sufficient, although a few participants expressed preferences for more rounds to refine their selections further. The fairness of the final decision was mostly rated high, indicating the system's efficacy in representing group preferences. However, some frustration arose when technical issues interfered with voting accuracy, notably when the "super dislike" feature failed to exclude undesired choices effectively. The average time spent in decision-making ranged from 53 seconds to 2 minutes and 36 seconds, with a mean of 1 minutes 48 seconds suggesting that the process was not excessively long.

Users provided concrete suggestions for enhancing BingeBuddies. Common themes included:

- Increasing the intuitiveness and clarity of the voting system.
- Enhancing the visibility and immediate clarity of key features like "super dislike."
- Reducing technical issues, including login problems and response lags.
- Allowing all participants to contribute genre selections rather than relying on a single group leader.
- Improving the visual design, suggesting the use of brighter colors, additional icons, and interactive features such as emojis and customizable avatars.

5 RESULTS AND DISCUSSION

The BingeBuddies platform was evaluated with user testing involving 11 participants divided into small groups of two to three individuals. Overall, the results indicate that BingeBuddies effectively addresses the key challenges identified during initial interviews: indecision, dissatisfaction with streaming recommendations, and inefficient decision-making.

The platform's structured voting system significantly streamlined the movie selection process, with all groups successfully reaching a consensus within an average decision-making time of under three minutes. The integration of multi-round voting and the "super dislike" feature proved especially effective, with participants indicating increased satisfaction due to their ability to quickly exclude strongly opposed options.

Technical performance emerged as an area for improvement. Several groups experienced latency and minor interface unresponsiveness, particularly noticeable during voting sessions and sign-up processes. This was primarily attributed to the geographical location of the server (Ireland) and limited internet connectivity. Despite these issues, participants remained positive about the platform's overall usability.

Users praised the real-time chat feature, noting that it facilitated clear and immediate communication during voting sessions, thus fostering greater engagement and transparency. However, there was a notable request from participants to implement restrictions on chat activity during actual content playback to reduce distractions and maintain focus.

Participants suggested several enhancements for future iterations of BingeBuddies. Notably, there was a request for a more intuitive interface with clearer visual indicators for critical actions, such as initiating voting and utilizing the "super dislike" veto. Participants also expressed a desire for a more collaborative filter setting, allowing input from all group members rather than solely from the host.

Additionally, aesthetic improvements, including brighter color schemes, enhanced iconography, and personalized elements like emojis and avatars, were suggested to enrich the user experience.

In conclusion, BingeBuddies demonstrated significant potential in simplifying the collaborative decision-making process for media selection among groups. The structured voting approach, combined with effective communication tools, greatly reduced typical friction points associated with group viewing decisions. Nevertheless, addressing the technical and interface-related feedback will be crucial for future development to fully realize the platform's potential and enhance user satisfaction.

6 FUTURE WORKS

For future work, we would need to take into account the previous findings and improve our application then conduct a new series of tests on this improved version.

Something we really wanted people to test is the "Waking-up alarm" feature we had in the low-fidelity prototype but due time constraints we gave-up on implementing it.

In our first talk about BingeBuddies, we included all kinds of services such as : books, music, movies/series and even streaming platforms. But it was in our best interest to focus on one service only, thus for a next version of BingeBuddies maybe we could incorporate these missing services. Another feature we did not implement is when someone needs to pause the films/series for whatever reason which may be quite long, so to entertain the audience we thought of adding a quick game like a quiz or a platformer.

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