Connected Viewing: Social App for Streaming Shows

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This dissertation explores how viewers can feel the same connectedness when asynchronously streaming Netflix, Hulu, etc. as they do when watching traditional television TV. The researcher adopted a user-centred design approach to propose a new design feature to augment existing streaming services that would provide viewers with this sense of connectedness. The methodology first consisted of interviews to gather participants' experiences with streaming, and then data was analysed through thematic analysis. The researcher then proposed a new design solution that would allow users to post comments at specific times and then show those comments to other users at those times. The design was then evaluated through the evaluation method of observations combined with a mini-interview about their new experience. The participants noted this design solution amplified their sense of connection. As part of this dissertation, the researcher proposed design guidelines that take into account people's sense of connectedness. An important finding from this study is that people need to feel connected even when they are streaming. Thus, there is an opportunity to conduct further studies in this area.

1 TOPIC AND MOTIVATION

According to media studies, nowadays, viewers can consume video content whenever they can access a smart device [26] due to the rise of streaming services that provide people with individual freedom and flexibility [16]. Nowadays, people choose to use streaming services over watching TV more and more for multiple reasons. By streaming a show, users lose the feeling of watching something live in comparison to traditional TV where others can watch simultaneously and can discuss on social media. A study by Luo et al. [24], which focused on emotional amplification during live streaming, found that watching events such as the Super Bowl with family and friends on Television got people more excited than watching them alone.

In recent years, live streaming services such as Twitch, Facebook, and YouTube Live have become increasingly popular for sharing information on themes ranging from entertainment to news events. These services allow consumers to view the same material remotely as they do with others while promoting social engagement. Since 2015, when the term binge-watching (watching several episodes of a television series one after another) became mainstream, people have been watching shows independently, and an activity that was once a social function is now a solitary one.

According to the literature review, most second-screen applications focus on providing more information and engagement to the viewer, not on bringing people together. There is not much research in either the Current Human-Computer Interaction (HCI) field or media on how to make people feel connected in an activity they do independently. This illustrates an opportunity within HCI to explore how to communicate with people with similar interests in streaming services like Netflix, Hulu, and other streaming platforms to watch a TV show. According to a communication study by Xu and Yan in 2011 [17], the connection among viewers sometimes depends on the show and its popularity. It is driven by three factors: shared viewing among friends and family, the anticipation of upcoming conversations, and a sense of broader society maintained by similar television experiences and communication with strangers.

Second-screen applications are gaining popularity in both research and commercial fields. Most of the applications that were studied in this dissertation's framework primarily focus on re-engaging viewers with TV content when they divert their attention away by inserting interactive content [7] or making them understand the show's lore better by

showing extra information [2]. According to Lohmüller and Wolff [33], a second screen activity is classified as such if it is used simultaneously and takes place on two physically separated devices. Namely, the contents of the second screen are information, social, games and control. Due to recent rapid technological developments, the activity of second screening has emerged.

This study examines how people feel when streaming a TV show, especially feelings of connectedness and engagement. This project aims to answer the question: can people feel connected even when streaming a show on their own time? HCI research studies use a second screen to analyse how people watch broadcasts and how people feel while watching them. My research builds on this and goes further to develop an application that makes people feel connected, even when they are watching a show on their own time.

1.1 Aims

This dissertation attempts to improve viewers' sense of connection and liveness when watching TV shows asynchronously. In addition, it aims to explore the impact of introducing social interaction aspects into streaming services to generate a sense of connectedness. The social interaction aspects could be investigated by researching different features, such as virtual parties, shared playlists, or virtual watch parties and how these influence the perceived sensation of connection. This study will centre on open-ended interviews to generate a set of user needs and prototype a digital application, to improve connection and user involvement while watching a TV show.

1.2 Objectives

The primary objectives of this research will be based on the previously outlined goals. More specifically, the study tries to:

- Identify the essential components that contribute to traditional broadcast TV's sense of connection and liveliness.
- Investigate existing asynchronous streaming systems and examine their tactics for promoting social interaction.
- Compare users' feelings of connection and social presence during synchronised viewing sessions against individual asynchronous streaming sessions.
- Create and test a prototype of a second-screen application with social interaction capabilities.
- Conduct user studies (observations) to assess the prototype's effectiveness in improving the sensation of connection.
- Investigate the influence of various social interaction features on the streaming experience by assessing user preferences and attitudes toward these features.

1.3 Research Questions

The research questions of this dissertation are the following:

- What key aspects contribute to broadcast TV shows feeling dynamic and connected? What distinguishes these aspects from current asynchronous streaming experiences?
- How can social interactions fit into asynchronous streaming systems without interfering with the viewing experience?
- How could integrated social interaction capabilities improve users' sense of connection and liveliness compared to standard asynchronous streaming experiences?

2 BACKGROUND REVIEW

Media multitasking is not new. It is a viewing model that has rapidly grown, with the first model appearing as the occasional sole radio use in 1953 [33]. The spread of mobile devices has allowed their simultaneous usage with other activities, such as watching TV, leading to an increased multitasking rate in recent years. Most people always have their cell phones and use them to search for more information, engage in social media, browse the Internet, or interact with their friends while watching TV or working on a laptop. Smith and Boyles [1] studied the emergence of the "connected viewer" and found that 29% of cell phone owners who use text messaging have recently used their phones to exchange text messages with someone viewing the same programme in a different place. The most common of the seven specific linked watching habits is the usage of cell phones as a "distraction device". Other noteworthy figures revealed that 23% of phone owners used it to text someone viewing the same programme in a different place, 11% left comments online about a programme, and 6% voted for a reality show competitor.

2.1 Different ways of watching a show

According to Diego et al. [25], half of internet users watch TV online. In 2015 Netflix changed its viewing model, releasing all episodes at once. This change disrupted the traditional ways of TV programming, and binge-watching as an activity emerged [16]. Binge-watching indicates a high degree of connectedness with the content the viewer is watching. The popularity of streaming services has been linked to the promise of personal freedom and flexibility. Through self-scheduling, time shifting, and on-demand retrieval, emerging technologies enable media users to choose what and when to view.

TV consumption is no longer a domestic, family activity but focuses on social viewing [14]. According to D'heer and Courtois [14], TV viewing is accomplished together but experienced alone. In 1990, TV was turned on as a time regulator that connected the household to the outside world. Now that people turn on their PC, they do not need a TV companion for background noise. TV consumption is now a household meeting point and a social function [18]. Second screen applications are sometimes not used to continue the content shown on TV; for example, a soap opera does not require the viewer's full attention, so a viewer goes to social media, answers e-mails, or searches the Internet for background information about the show watched on TV.

2.2 Using social media as a second-screen application

Nowadays, with the introduction of online social networks that enable status updates to be instantaneously transmitted in real-time, a second screen for engagement with the TV has emerged. Inter-audience engagement had previously been limited to a shared location during the broadcast or afterwards discussions among friends and coworkers, commonly referred to as 'water cooler moments' [22]. Watching TV combined with audience interaction through a second screen or multiple displays [12] has become popular as second-screen-compatible gadgets have become more widespread and affordable [9]. According to Ducey and Phalen [26], 43% of users use social media to engage cross-platform while watching TV. Twitter, for example, allows huge groups of television show viewers to chat and remark on the show being viewed [21].

A study [29] about what motivates people to tweet while watching a show suggested that the respondent's reasons for live tweeting were divided into three basic categories: sadness/grief, humour, and character development. According to the research, users obtained various personal benefits, the most significant of which was the opportunity to socialise, not feel isolated, and be part of a broader phenomenon [28].

A similar study about how participants managed their social TV activity also mentioned that participants chose to engage with social media because they often have different tastes from their close circle. Live tweeting allows viewers to feel connected with a broader online viewing community while also making social bonds with real-life friends stronger, providing topics of conversation around shared interests [3]. Another study [20] agrees with this conclusion suggesting that sharing a social experience with others and expressing oneself to a larger crowd can enhance one's understanding of watching television simulcast.

Pittman and Tefertiller [23] undertook a different study to compare participants' second-screen behaviour when watching traditional TV or asynchronous show releases. While viewing patterns fluctuate substantially depending on the release strategy, levels of co-connected viewing are remarkably similar. According to their findings, whether a viewer is watching a single episode at a network-determined time or "bingeing" on a season over many days, the social component of using Twitter remains consistent.

2.3 State of the art Applications – Commercial use

According to Huber et al. [7], 74% of TV viewers use a second-screen app, and those users find TV viewing more enjoyable. Companion experiences [30] are multi-device experiences that provide supplementary material ranging from interesting information to social media or a comprehensive play-along game.

The two most popular second screen applications are Amazon Prime Video and IntoNow. Amazon Prime application gives encyclopaedic, time-synchronised content and information about features in a film. IntoNow allows the user to upload personalised clips [2] along with statistics.

Various TV shows developed their own second screen applications to make their programme more engaging. A cooking show, CAKE, had an application that provided a step-by-step cooking plan at the viewers' pace [19]. The quiz show encouraged viewers to play the same game as the show's participants in the studio via its mobile application [25].

Other social TV applications allow users to communicate directly with each other. CollaboraTV, for example, enabled asynchronous communication by allowing viewers to post comments at specific points during a television broadcast. Most existing social TV programmes that would enable direct conversation are limited to a smaller circle of family and friends. The explanation is likely that these people no longer can watch TV together and that social TV allows them to replicate a social co-watching experience. [8]. Similarly, AmigoTV [32] incorporates social media allowing real-time discussions, developing a feeling of community.

Miso and Tunerfish are two current social TV platforms allowing users to designate which TV show they view by 'checking in'. In this manner, the applications generate a sense of similarity in what you see, like how you might feel if everyone in your area were watching the same television show, and the next day people would speak about it. Furthermore, people advertise themselves as die-hard fans of particular series' [8].

2.4 State of the art Applications – Research use

HCI researchers have created numerous applications for research objectives, such as an app for long-arc television shows that helps viewers keep track of the narrative behind each character or an app that determines what people would watch on Television each week. All these apps have contributed to HCI and media studies about the use of second screens and how they affect the overall viewing experience of users.

In 2014, researchers at the University of Nottingham [12] developed an Olympic companion app for those viewing the Olympic Games. A prototype Olympic app was developed that allows viewers to watch multiple sports events and statistics on different devices. An essential feature of the prototype was that they could go back and forth in time to catch

up on missed events. Additionally, the video could be watched on both the second screen and the Television. The app allowed users to watch alone and control the second screen device even when collocated, which was well accepted in social settings. However, users faced confusion about whether the program was live or not.

Second screen apps are primarily used to provide more information about the story unfolding on the screen, which is what the authors Murray and Nandakumar [2] created. It is a second-screen synchronised programme that helps viewers follow drama series with recurring characters and multi-episode plot arcs. The features included story maps, comments on events, and character relationships. Only characters present or mentioned in that scene were represented on the story map, so there would be no spoilers. Individuals would like second-screen applications that let them dive into complicated TV storylines in the middle of the season or follow them from the beginning with the keen eye of a habitual watcher. They thought watching such shows with the app was more appealing and engaging. A similar application was created by Geerts et al. [9], where their application featured a timeline of the content timed with the main screen activity.

Many second-screen applications serve as an extension of what is happening on TV or to bring people together in watching a particular show. Screenr is an example of such an application. The software was created as part of the research of Feltwell et al. [31]. Their programme was used to co-select TV shows (through voting) for the group's weekly watching. The features included a real-time interface for labelling on-screen patterns and behaviours and a chat interface for debate. The app was used in a group environment where members voted for the show they wanted to see for the week and then watched it when it aired. The app encouraged reflective and pluralistic dialogue. Many participants compared it with the behaviour of monitoring social media but rarely posting material, although the built-in chat function enabled speedy back-and-forth comments, contributing to social cohesion.

A Brazilian research team followed a different approach about second screen applications. Based on HCI literature [6], the team created a telehealth application to raise awareness about Dengue sickness. The programme was intended to provide additional information on the condition. The application was synchronised with the Television, displaying extra medical information and an interactive game on how to treat the sickness. 51% of users noted that they understood the disease's educational material.

2.5 Second screen applications – design guidelines

Many research articles have constructed second-screen applications, evaluated them mainly through observational methodology, and published recommendations for second-screen application design.

According to Geerts et al. [9], a companion app should be straightforward regarding discovery and accessibility, so starting the interactive TV experience requires no effort. An essential component of creating such apps is balancing engagement and distraction.

The most important feature of a second screen application, according to Anstead et al. [12], is feedback. For example, in their application, the user could time shift what they were watching, fast forward, and go back, so having feedback from the application, if what they were watching was live or not, was very important.

3 METHODOLOGY

My methodological approach utilises a user-centred design approach. Within this section, the methods utilised are explained further. The researcher conducted interviews, and the data collected was later used to design a high-fidelity prototype. Interviews focused on exploring the participants' current viewing experience and how that experience makes them feel connected or disconnected. The data collected were analysed through thematic analysis, where many

interesting themes and sub-themes were formed [15]. Based on the data collected, the researcher then developed a design solution that would help participants feel more connected to existing friends or just strangers from around the world. The prototype added a new feature on existing streaming services, where a comment timeline was shown synched with the video clip the viewers were watching. Later, the researcher conducted observations where participants could use the prototype and answer some questions about their experience with the prototype.

3.1 Conducting Interviews

For this study, eight semi-structured interviews took place in June 2023. The interviews aimed to define the user requirements for the prototype and how streaming TV shows make people feel in terms of connection and engagement. Additionally, the interviews focused on how social interactions could fit into asynchronous streaming services without interrupting the streaming experience. The participants were gathered through the snowball sampling method. There were no requirements for participants for this research, only that they had to experience asynchronous streaming services such as Netflix, Amazon Prime etc. Participants were recruited from the researcher's connections, and those connections had to recruit someone from their contacts, so the data collected was not biased towards friends who just wanted to help the researcher.

The interview lasted 30 minutes, with questions divided into seven subthemes: current streaming experiences, motivations, and goals, e.g., why watch a particular show, time management and flexibility, e.g., talking about specific pros and cons of streaming a show, sense of connectedness, desired interactions and features, unmet desires, and limitations they had with current services, and finally, future expectations of services in terms of solving the connectedness problem. After the eight interviews were completed, they were transcribed, and enough data was collected to examine them through thematic analysis and form themes and subthemes. The data obtained from the interviews yielded many interesting insights and findings.

3.2 Thematic Analysis Results

The researcher divided the data into four themes, why stream (Figure 1), why watch a specific show (Figure 2), feelings about interaction while streaming (Figure 3), and missing features of streaming services (Figure 4).

3.2.1 Why Stream a show rather than watching a show on TV

The "Why Stream" theme concerns the participants' reasoning for streaming instead of watching traditional TV (Figure 1). As discussed before, one topic of discussion at the interview stage was about the participants' current streaming experience, motivation and goals, time management, and flexibility. The answers to the questions under those sections showed a similar theme about why they chose to use streaming platforms instead of watching TV. Participants choose to stream because they have time flexibility. The time flexibility allows them to watch whenever they want and use their free time or plan their day. Participants also choose to stream because of the flexibility of location. Time and location flexibility were two topics that the participants heavily mentioned as advantages that they associated with streaming TV shows. Not only can they stream whenever they want, but they can also stream wherever they want, for example, when travelling.

"…They allow me to explore a wide range of content at my own pace and convenience…"

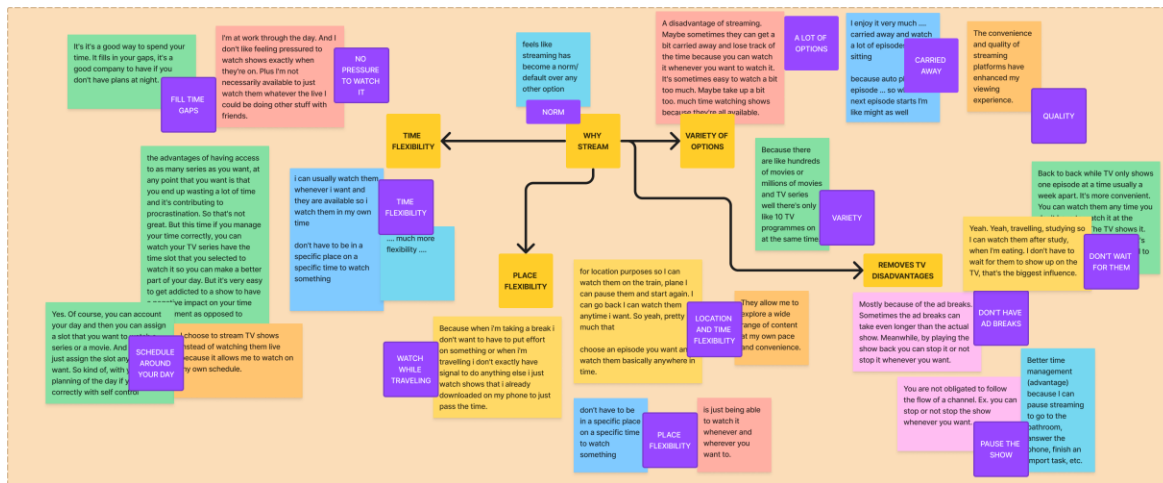"…choose an episode you want and watch it anywhere, anytime…"

Figure 1: The formation of the theme "Why Stream" and its sub-themes, time and place flexibility, and variety of options removes TV disadvantages

Participants mentioned the variety of options and the excellent quality of the options to stream as one of the reasons to stream instead of watching TV. The limitation of TV shows that are broadcasted on TV was something that, according to the interviews, repelled the participants in watching live TV and instead drew them to choosing streaming platforms.

"…Because they are like 100 movies or millions … but only 10 TV programmes on at the same time…"

Finally, participants mentioned that streaming eliminates many of the disadvantages of TV, such as TV advertising or the inability to pause playback. During the thematic analysis, this sub-theme overlaps with the time flexibility sub-theme because the disadvantages they mentioned were mainly about TV's flow, which could also fall under the time flexibility. For example, the advertisement break complaint could also be classified under time flexibility as it would take longer to watch the exact episode on broadcast TV instead of a streaming show.

"…sometimes the ad breaks can take even longer than the actual show…"

One participant noted that he could choose to stream because it felt like the new default way to watch shows because, as mentioned above by other participants, traditional TV has many disadvantages that are eliminated by using a streaming platform.

3.2.2 Why choose to watch a particular show

Another theme is "Why to watch a specific show," where they talked about why they would choose a particular show instead of the countless others they had to browse.

As mentioned in the previous section, another topic of the interviews was their current streaming experiences. During this topic, participants described their recent streaming experience, where they mentioned what show/movie they were watching and why they chose it. Most participants were watching reality TV shows, which they classified as boring shows to have as background noise because, according to them, even if they let it un-paused and return after a while, it wouldn't matter.

"…like a casual show sort of just have that run in the background while maybe doing something else…"

A similar sub-theme was about watching a show for entertainment purposes; some participants mentioned that their main reasoning for starting streaming a show was to take a break from whatever they were doing and watch something engaging and entertaining; for example, two participants mentioned that they watched Marvel films because according to them it is entertaining and they could escape from reality for a bit, while relaxing and then go back to studying.

The two most common reasons given in the interviews were that the participants watched a particular programme either because it was recommended by a friend or because they read online reviews and ratings. These two subthemes were the two most frequently cited reasons for watching a programme/film. This can be seen in Figure 2, which shows that most citations on this topic fall under the friends or online recommendations subtopic.
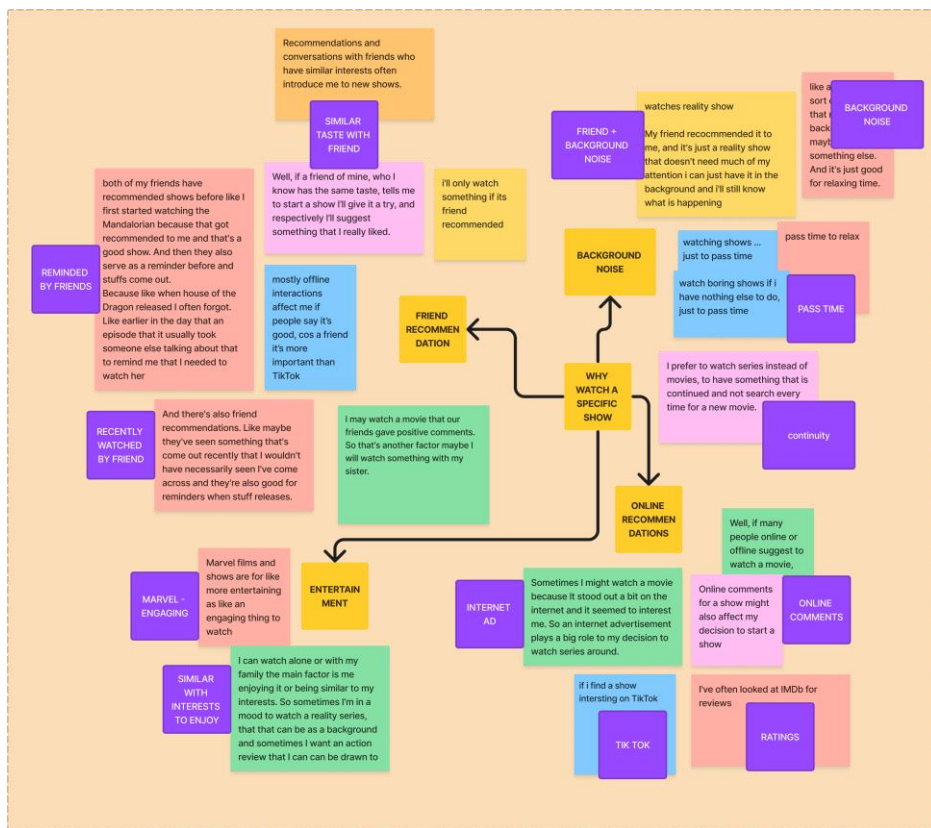

Figure 2: Presents the theme of "why watch a specific show" with its sub-theme's entertainment, friend and online recommendations, background noise

3.2.3 Feelings expressed about social interactions while using a streaming platform.

One of the main themes that emerged in the thematic analysis was feelings about interaction while streaming, with much of the data being about their sense of connection. The two main subthemes that emerged from the data collected were that people tend to be sociable during or after watching a programme, or the complete opposite and want to be left alone. Participants noted that they sometimes get carried away, binge-watch, and put off their tasks. Since streaming

platforms release all episodes at once and have automatic features to play the next episode, viewers often get carried away and lose track of time. According to the interviews, participants mentioned this was the downside of using streaming services because it is very easy to lose track of time while using them.

"…worst time management, cos I end up procrastinating important work, cos the episodes just keep playing…."

Participants also said that streaming feels like a social activity and they do not feel connected if they cannot share their thoughts with other people. Many respondents said they tend to discuss their opinions with existing friends or strangers on social media. An important note is that participants who share their opinions about episodes on social media are sometimes exposed to spoilers, which they feel ruins the experience.

"…sometimes I would go to Twitter and cos I didn't see the episode the moment it airs I see spoilers…if I see spoilers, it ruins the mood…"

They also noted that they felt disconnected or lonely if they didn't have anyone to discuss the particular show they watched.

"I don't like not having someone to watch stuff together… I feel disconnected when I watch a show that I don't know anyone that also watches it…."

As seen in Figure 3, most participants indicated that they would remain social while watching a programme. Although some participants indicated that they sometimes want to be social and talk to friends, sometimes they stream a show to escape reality and be alone, so they do not want to engage in social activities during that time.

"…Some people want to use it to disconnect, like forget about the real life and watch a show alone…"

Finally, some participants indicated that they enjoyed being in company after the movie or episode. Those participants said that although, they would like to stay social they didn't want to interrupt the flow of the show just to talk about it but rather discuss what they watched after the end of the movie or episode.

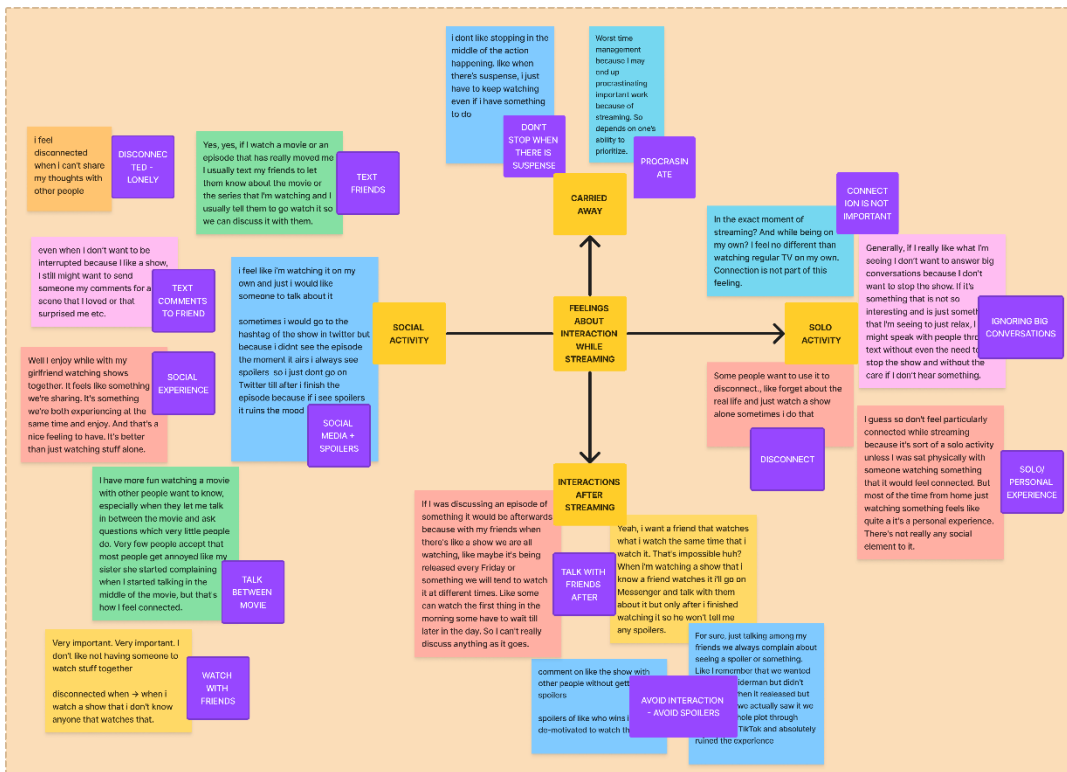"… I'll talk to a friend to talk about it after I finish streaming not during…"

Figure 3: The figure presents the theme "feelings about interaction while streaming", with its subthemes of social and solo activity, interactions after streaming and being carried away.

3.2.4 Existing Limitations of streaming platforms

One theme that emerged from the data analysis is the lack of features on existing streaming services that viewers would like to have in order to feel more connected to people they do not know or to their friends. The last three topics of the interviews were about desired interactions and features, unfulfilled desired and limitations and future expectations (Figure 4). The participants had the chance to talk about what they felt was missing from current streaming services. The main hint they gave was that they want a new design feature that allows them to have social interactions, and they do not care if they are existing friends or strangers, they want someone to talk to.

"…I don't know anyone that wants to watch Grey's Anatomy; who am I going to talk to then? I can make new friends that have the same show interests as me…"

Most participants said they would like a new feature that may enable them to make new friends with similar interests in shows, such as a live chat. The reason for the sub-theme 'Making New Friends' was that friends often have different tastes in TV shows and have no one to talk to about what they are watching, so they feel isolated or uninvolved.

Participants mentioned that sometimes they are watching an episode and a friend is two episodes ahead, so talking about it often leads to spoilers, which, as mentioned earlier, ruins the experience.

> "…if I discuss an episode with my friend, I need to be careful that we both are at the same one, cos I don't remember what happens when so what if say something that they haven't watched yet. No no that would be rude…"

Sometimes friends do have the same tastes but it is hard to synchronise so they can discuss it together. They mentioned that they would like a way to connect with existing friends, for example, the Netflix party application, but improved. The answers indicated that they wanted a way to watch with friends and talk about it at the same time either like a cinema experience or just casually watching something and talking simultaneously. Others talked about just commentary simultaneously as a show, so they could see other people's reactions to certain scenes without getting any spoilers.

> "…If I know my friend is also watching at the same time the same show, I want to connect with them. If I have someone to discuss it with, I'll maybe pay more attention to it…"

Finally, participants expressed a desire for social media-like interaction with their fellow viewers. They mentioned social media features from other platforms that they would like to see integrated in streaming platforms. An example of this was a participant who mentioned that they would like to see YouTube's Premiere feature integrated with Disney. Disney releases one episode at a time, so such a feature would make the experience more social because the release would be at a specific time, so people could gather and experience the episode at the same time without worrying about spoilers. According to respondents' answers, it would make them feel like part of a community.

> "…some sort of concurrent chat feature that is enabled when a show is premiering. Like if something gets released at six o' clock…"
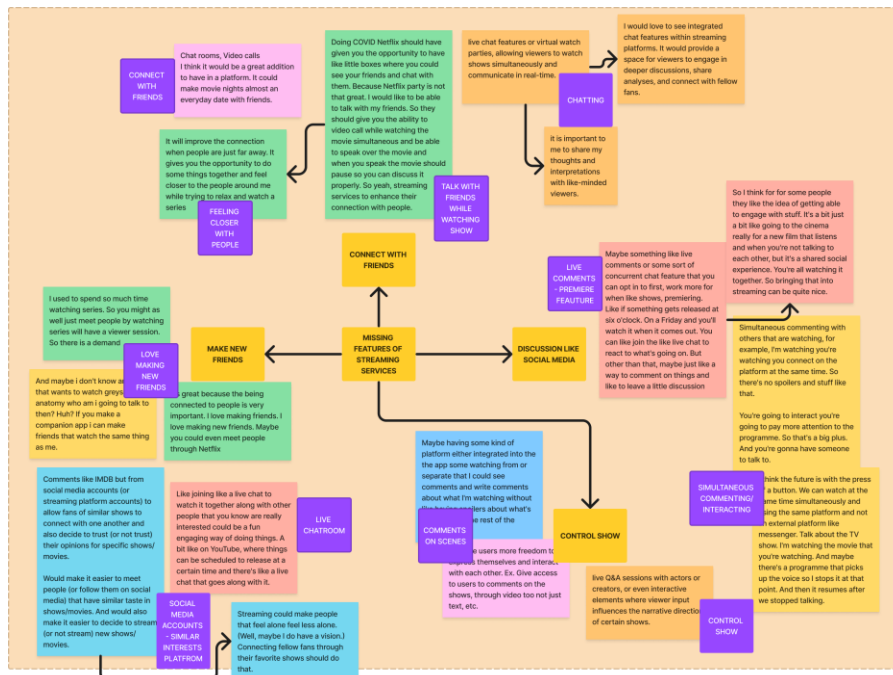
Figure 4: The figure displays the theme about the features participants felt missing from current streaming services, with the sub-themes of making new friends, connecting with friends, controlling shows and discussions like social media

4 DESIGNING THE PROTOTYPE

4.1 Ideation phase

Based on the results of the thematic analysis, the researcher began brainstorming possible design solutions for the participants' current experiences and concerns (Figure 5). In this case, the question was how to give users a better sense of connection when watching a streaming broadcast asynchronously. The focus was that the prototype should improve the current streaming experience in terms of feeling connected to others. It was also clear from the interviews that the researcher wanted to focus on the outcomes of the two issues, namely the sense of interaction when streaming and missing features of streaming services.

The theme of "feelings in relation to streaming interactions" provided many important insights presented in this section. Under the theme of "feelings," there were two subthemes, one about social interaction while watching and one about being alone while watching. Participants indicated that they either felt the need to feel connected and discuss their experiences with other people, or they used streaming services for entertainment purposes without the intention of feeling connected, which means that the solution should be optional; the user could choose to use it or not.

> "…sometimes I just want to watch something to relax. I might speak to people I might not. I don't want to have to engage with other people while watching my show…"

In addition, the proposed feature needed to ensure that while users were using asynchronous streaming platforms, their experience would not be ruined by spoilers. This experience was reflected at the theme about missing features under

the subtheme of "discussions like social media". As mentioned in the previous section, their experience with Twitter and spoilers was not good. They visited the hashtag of the series and because they were not up to date, they saw spoilers, and this demotivated them to watch the series.

"…spoilers, would ruin my mood and make me not look forward in watching my episode…"

One of the main considerations during brainstorming was whether the design should be used to connect with friends or just provide a social media-like experience, as it was clear from the interviews that some participants felt it was important to communicate with existing friends while watching the show, while others did not care whether they were existing friends or strangers. This was reflected under the theme of "missing features of streaming services" where two subthemes were formed by the researcher one about making new friends and one about connecting with friends.
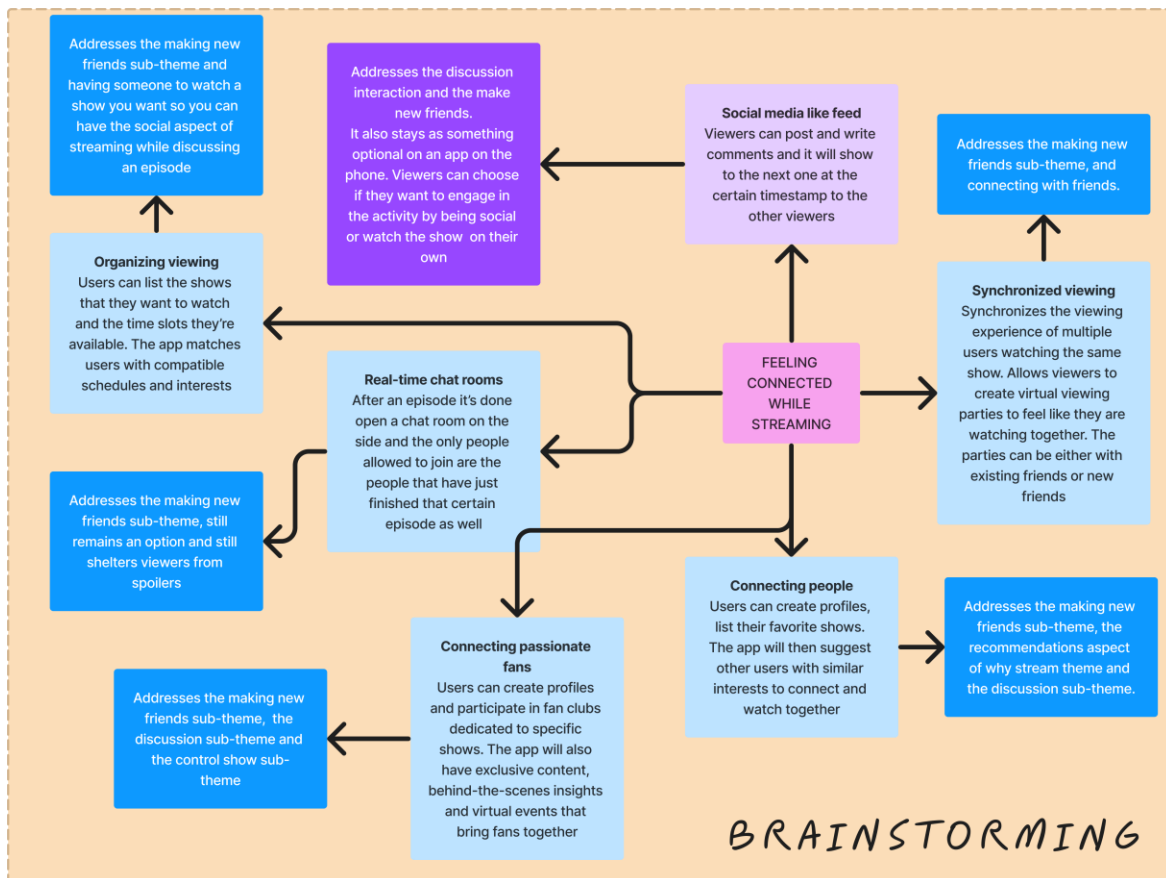

Figure 5: The figure presents some of the initial ideas coming up from the results of the thematic analysis

The design solution proposed by the researcher according to the results of thematic analysis would be a pair of a website and a mobile application that would act as a second screen application, where users could post comments at specific timestamps. Then other users could only see those comments at those specific timestamps that they were posted.

Furthermore, after having an initial idea for the design solution, the researcher started brainstorming for potential designs to help the viewers feel more connected. Some initial ideas are shown in Figure 6.

Figure 6: The figure presents some of the ideas for the actual ideation of the design of the prototype

4.2 Designing

After careful consideration, the researcher decided that the best design solution for the research questions proposed at the beginning of this dissertation was the "social media-like feed". The idea was to create a design that would make viewers feel like they were using an existing streaming service. Therefore, as can be seen in Figure 7, the user interface of the website tries to mimic a streaming platform with different shows and movies that users can navigate through. The prototype included four web pages, a welcome page with some initial information about the observation (Figure 7a), a main screen where they could see the different shows/movies available (Figure 7b), a favourites page where users could bookmark a particular show (Figure 7c) and the episodes page (Figure 7d).

The episode page follows a minimalistic design, focusing on the video player. The pause and mute buttons are functional to give the user the experience of having control of the episode. If the user wishes to read the comments, they can press the arrow button where an overlay is displayed with the comments, they can always close the overlay as they want to, and the comments remain there. Additionally, the new comments are shown at the top of the overlay, so if the user wishes, they can scroll and read past comments. Due to the website being a prototype, the comments were written during the development phase with calculated delays.
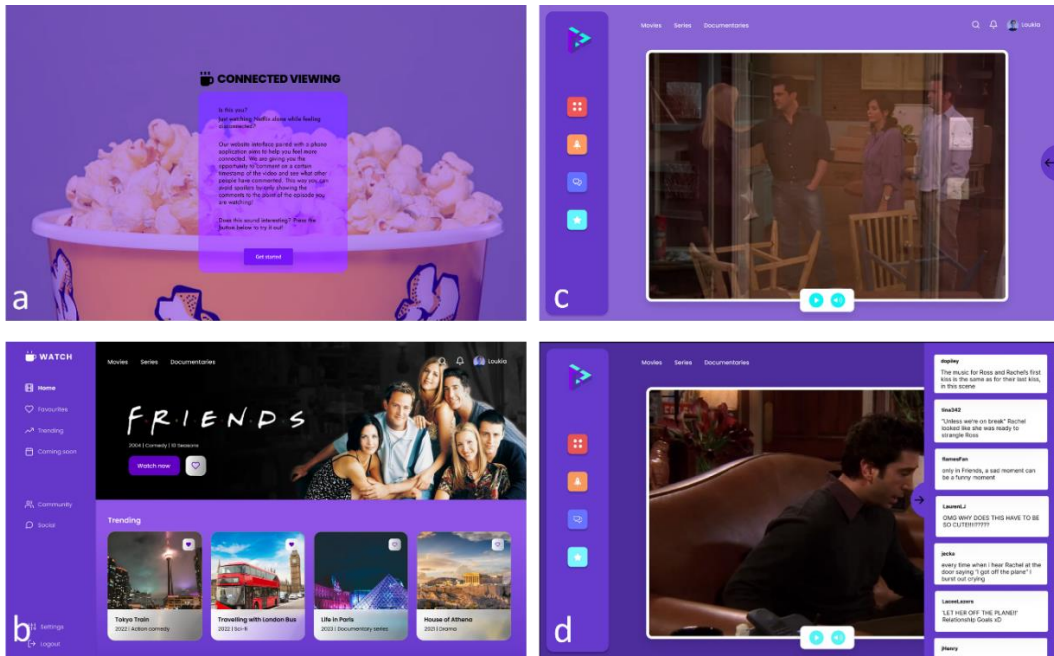
Figure 7a-d: The figure displays the different web interfaces of the high-fidelity prototype
(a: welcome page, b: main screen, c: favourites page and d: episodes page).

The mobile application will be a similar interface to the overlay on the web, but it will not show the video player, only the comments of viewers using the mobile phone application. The screens of the mobile application as showed in Figure 8 include one main screen, one search screen and one displaying the comments of the show that they are watching. The main screen of the mobile application includes the show that they are currently watching in the main device, where they can press play and go directly to the comment page. The search screen provides example title of movies or TV series, so participants can feel like they are using a real mobile application. Lastly, the most important screen is the one with the comments, where the comments appear synchronised with the main screen's activity, and they can also scroll down to see past comments they may not have time to read at that moment. They are able to write new comments while watching the show and reply to existing comments to start conversation threads.
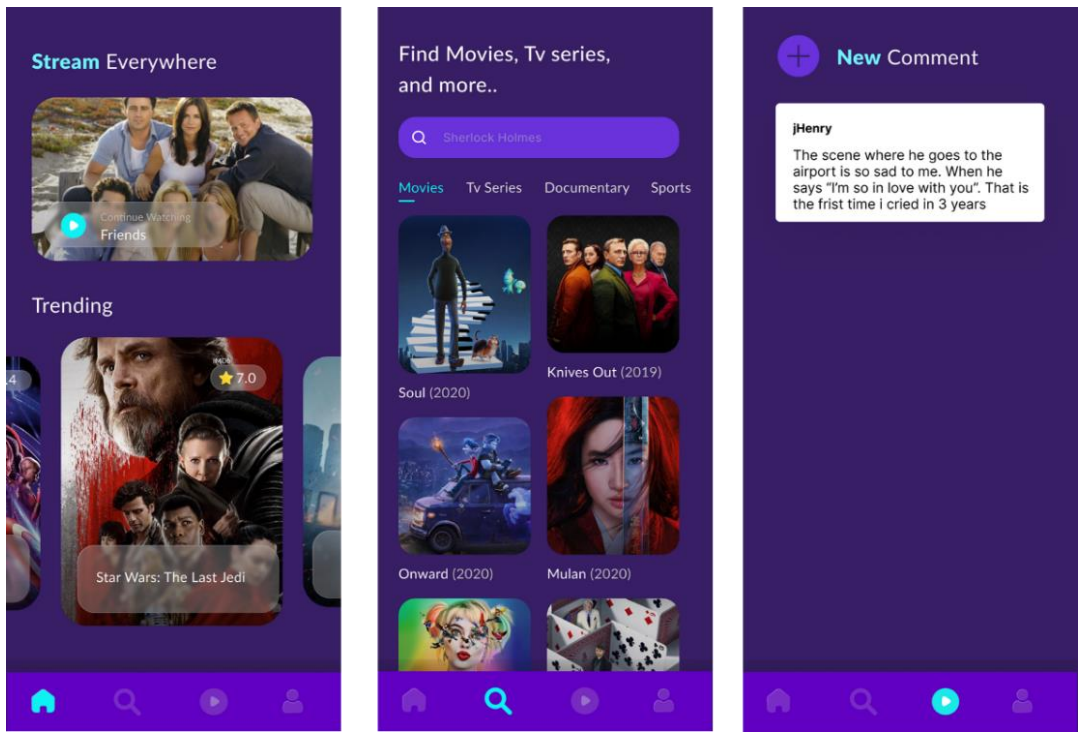
Figure 8 presents the user interface for the mobile application high-fidelity prototype.

5 EVALUATION THROUGH OBSERVATIONS

After prototype development, five observations were conducted in July 2023 with a 5-minute interaction with the prototype followed by a 15-minute interview. The researcher chose to conduct observations instead of another method of evaluation because observations allowed them to determine how users behaved in the context of the prototype [4, 5]. The observations could also provide valuable insights into how the design improved the user's sense of connectedness and liveliness compared to a standard asynchronous streaming experience such as Netflix, Amazon Prime Video, etc.

The participants were a mixture of three individuals who participated in the initial interviews and two others who were recruited using the snowball method primarily through friends of friends. Participants were selected because it was important to have participants who knew about the research and those who had no idea what the study was about before participating in the observations/interviews.

An important constraint that participants faced was that they could not post new comments or respond to comments due to the time constraints of prototyping and the limitations that Figma has. This limitation was tackled by providing two stacks of Post-it Notes, one to mimic posting a new comment and one to respond to comments. The Post-it notes helped participants to have a more immersive experience using the prototype.

For the observation, the researcher chose to show the participants a small clip from the show Friends. This show was chosen because it is a top-rated show that most people have already watched, and it is a show that is mainly watched asynchronously as it does not air on the TV. Although it is a show that aired almost a decade ago, it has a significant social media presence, which makes it easier to find Twitter or YouTube comments to add to the comment timeline of the show. Furthermore, it was essential to show a clip of a show that people already knew. There was a bit of suspense,

because viewers were supposed to understand what they were seeing without having to be told what was happening earlier in the programme. They were to concentrate on deepening the experience of seeing Friends they already had, rather than having a whole new experience with a programme they may never have heard of.

5.1 Conducting Observations

After the participants watched a small clip of the last episode of Friends, through my prototype and using the Post-it notes, they were questioned about their choice to post new comments or reply to existing ones. Some participants opted out of adding comments to the conversation because they got overwhelmed with the whole experience and the clip being five minutes short. Another participant replied to existing comments but only to comments they disagreed with. Most participants wrote down their comments, highlighting their points of view on the show. For example, at the beginning of the clip, there weren't any comments posted intentionally, so the participants can be encouraged to write some of their own, which they did.

The last part of the observations was semi-structured interviews. The interview questions focused on the viewers' experience rather than the prototype's usability because the researcher thought it was more important to see if the design solution made them feel more connected than evaluating the design's usability.

5.2 Results of Evaluation

Most of the participants noted that the experience did make them feel more connected with other people, and some of them compared their experience to being on Twitter while watching a live show on TV, which was the aim of the design. It was also mentioned that this design allowed participants to communicate with their friends without interrupting the flow of the show by talking to each other, because they could post a comment and a friend could reply to it, thus having a whole conversation. None of the participants felt that the comments negatively impacted the viewing experience.

"…I feel like I can talk with people freely without being scared of spoilers, or I can just close it and talk to no one…"

On the contrary, by this design they felt more connected to other people who watch the same show as them, without necessarily watching it at the same time. In the initial phase of the survey, the two main barriers to feeling connected were either having a different schedule than their friends or not having the same tastes as them. Another limitation to using social media to see what others thought about what they were watching was that they accidentally saw spoilers, which they felt ruined the whole experience. The three participants in both interviews mentioned that the design solved their previous limitation of feeling connected. All five participants noted that if this were an actual design attached to an already familiar streaming service, Disney+, they would use it because it is lacking in the modern streaming industry.

6 DISCUSSION

With this work, I aimed to provide valuable insights to researchers and HCI practitioners designing platforms for streaming services, with a focus on the sense of connectedness between users of these platforms. The following section returns to the research questions and presents the themes that emerged from the methodology. The themes also represent the main areas of current concern for viewers. At the same time, these themes offer professionals the opportunity to develop approaches that help people feel more connected to one another. In addition, they emphasise the design space where designers can explore how to develop better features that make viewers feel more connected.

6.1 How could the asynchronous streaming experience feel more dynamic and engaging

One of the research questions posed at the outset of this study was about the key aspects that make broadcast TV programmes feel dynamic and connected, and how a designer could bring these aspects to the asynchronous streaming experience to make that experience more dynamic and make viewers feel connected.

In their exploration of the topic through the interviews, the researcher found that one of the most important aspects that makes TV seem more dynamic than streaming platforms is that the viewer is tied to a specific time and place, which is an advantage of streaming media, but also a disadvantage at the same time. When you confine people to a particular time and place, they can talk to each other simultaneously about their experiences and so feel more connected. Additionally, because the show is live and is something that is happening at the same time for everyone, the producers often [11] engage through Twitter with their audience by either having an actor live-tweeting or with fun quizzes, which is a way for people to be more connected with each other. This experience is challenging to mimic in an asynchronous environment without having spoilers.

According to a recent study conducted by Pittman et al. [23], linked viewing and co-viewing patterns differed between regularly aired television series and streaming, asynchronous television releases. They looked at two streaming shows, one from Netflix and one from Television. The two streaming programmes had similar Twitter activity, with an average of 58% of active Twitter users engaging for appointment shows and 52% for the asynchronous programme. Although the number of tweets containing the word spoiler was similarly consistent, it was 0.77% for the televised programme and 5.34% for the asynchronous programme because people watch the episodes at different times.

The prototype created through this research tried to respond to this problem by having the comments appear only after the viewer reached that timestamp. The viewer could also reply to existing comments and add the commenters as friends. This way, the researcher brought some key aspects of broadcast TV on the streaming services. Although this design has some challenges, the number of comments would be overwhelming if it was applied to an actual streaming service, especially under a top-rated show. A study by Huber et al. [7], showed that the rapid flow of live chat messages may be difficult to digest, making emotions of connection or group affiliation less probable. One solution for this challenge would be a filtering system. Filtering the comments for example through friends, so the only comments shown would be the ones written form the viewers' close circle. Also, since some users like to re-watch their favourite shows, it would be imperative to moderate the comments where they would have to be approved or rejected before they appear to the public.

6.2 How social interactions would fit into asynchronous streaming platforms

Another research question addressed how social interactions would fit into asynchronous streaming systems without interfering with the viewing experience. The data collected from the interviews showed that many participants choose to use a streaming service to escape reality and sit in front of a screen for a couple of hours, watching a movie/show. Two studies [10, 27] found a vital social component that may be attributed to two different incentives: social interaction and co-viewing. This shows that people choose what they watch based on their need for entertainment or socialising.

Even though the research was about people feeling more connected, through the interviews, it was discovered that although viewers did want to feel more connected while watching a show, sometimes they didn't, so whatever the solution was, it should be an option and not something that completely interfered with their experience. The design solution proposed in this research is a web interface and a mobile application. If the viewer doesn't want to engage with other people and their main reason for using the platform is to escape reality, they do not have to use the mobile application. Moreover, the comment timeline section overlays the existing website, so if they don't engage with it, they can leave it closed. Feeling a connection with other people while watching something is a personal decision.

In addition, users should be able to choose whether to "talk" to other people, just as they do when watching TV. When viewers watch TV, they can do so all by themselves, invite people to their couch to watch together, or participate via social media. The choice is theirs. Designers need to keep that in mind when designing a streaming platform, so they don't force a human connection when the user doesn't want it.

According to a study by Cohen and Lancaster [13], several mediated co-viewing actions were indicated by the need to belong. The need for isolation predicted in-person co-viewing negatively, whereas the need for companionship predicted in-person co-viewing favourably. The findings show that viewers have varying motives for participating in various co-viewing activities.

6.3 How much would design features improve users' sense of connection and liveliness.

The final proposed research question is to what extend one or more design features can improve users' sense of connection and liveliness compared to asynchronous streaming. For example, how might the prototype presented in this study impact users' experience in terms of connection versus just sitting at home watching Netflix alone. The interviews conducted at the evaluation stage by this researcher, paired with the observations, showed that even a small design feature, such as a comment timeline synced with the video clip viewers were watching (Figure 7d), could impact the user's experience. The participants at the observations noted that if this feature was implemented in a popular streaming service, their feeling of connection would be amplified because they could see what other people were thinking at that point of the show, and they could reply to feel that they have someone to talk to at the same time.

One participant even mentioned using the above-mentioned feature with their friends, so they don't have to talk during the movie, which many participants said was annoying. The reasoning behind it was that viewers want to feel connected with each other and talk among themselves, but at the same time, they want to focus on the movie and not have their experience routinely interrupted. Therefore, the design feature proposed in this study could be used similarly to extensions already implemented, such as Netflix Party. However, instead of just typing to each other, everyone could join the conversation either at a later time when they feel like it or at the same time when someone posts their comment.

6.4 Limitations and Future Implications

While some methodological limitations have been discussed, the short duration of this project leaves an abundance of opportunities for development. First, the exploratory prototype acted as the final stage of this project. However, future explorations of a higher fidelity prototype and focus on the user interface could also lead the way for future developments; due to the time constraints, the ability to assess connectedness to place was limited. While users noted that their sense of connection was improved, there is still an inability to test this impact over a more extended period and perhaps for different types of TV shows and longer durations. Further evaluation of the prototype could be utilised to better understand the significance of features. Previous research has presented features for second-screen devices, studies of users' behaviour and again social features such as Twitter when watching broadcast TV or asynchronous streaming services. As demonstrated within the initial interviews and the user evaluation, the importance of people feeling connected is the core of the application as it is a human need and something essential. It is missing in the time of day for second-screen applications for asynchronous streaming experiences.

7 CONCLUSION

This study contributed to the field of HCI by providing some design guidelines for streaming platforms to provide a sense of connection. While there are extensions of these streaming platforms that take advantage of social connection,

their number is rather small. They also do not provide a way to share comments and thoughts with others the user may not know, such as mimicking the Twitter experience during a live broadcast. This often makes people feel even more isolated when watching a show. Although people often use these platforms to escape reality, they often want to hear other people's opinions. Feeling connected is always important to people because it's a feeling we usually take at face value, and it's ingrained in our social behaviour.

Acknowledgements

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A   APPENDICES

A.1   Ethical Approval Form

Ethics Form Completed for Project: Connected Viewing: Social App for Streaming Shows Loukia Ioannou

P   Policy & Information Team, Newcastle University <noreply@limesurvey.org>
To: Loukia Ioannou (PGT)

Mon 5/22/2023 2:38 PM

⚠ External sender. Take care when opening links or attachments. Do not provide your login details.

Ref: 33162/2023

Thank you for submitting the ethical approval form for the project 'Connected Viewing: Social App for Streaming Shows' (Lead Investigator: Loukia Ioannou). Expected to run from 29/05/2023 to 14/08/2023.

Based on your answers, the University Ethics Committee grants its approval for you to start working on your project. Please be aware that if you make any significant changes to your proposal then you should complete this form again, as further review may be required. This confirmation may be used within a research portfolio as evidence of ethical approval. Please note: this confirmation will be the only correspondence you should expect to receive as evidence of ethical approval. There will be no other confirmation provided. You may now proceed with research. If you have any queries, please review the internal and external ethics FAQ pages before contacting res.policy@ncl.ac.uk.

Best wishes

Research Policy Intelligence and Ethics Team,

Research Strategy & Development
res.policy@ncl.ac.uk

A.2   Interview Questions

1. Introduction

a. Briefly Introduce yourself and the purpose of the interview
b. Ask for the participant's consent to record the interview.

2. Current Streaming Experience

a. Can you talk a bit about how you use streaming services and your overall experience?
b. How many hours per week do you stream TV shows?
c. What platforms or streaming services do you use?
d. How would you describe your overall experience with streaming?
e. What are you watching at the moment and why did you choose that?

3. Motivations and Goals

a. Why do you choose to stream TV shows instead of watching them live?
b. What factors play a role in your decision to stream a particular TV show?
c. Are there any specific reasons or circumstances that influence your decision to stream?

4. Time Management and Flexibility

a. Are there any specific advantages or disadvantages you associate with streaming TV shows in terms of time management?
b. Do you find yourself watching in one go, do you use pause, do you fast forward? Why?

5. Sense of Connection

a. Can you talk a bit about how you are feeling while streaming in regard of feeling connected?
b. Do you feel a sense of connection or engagement while streaming?
c. How important is it for you to feel connected to others while watching a show?
d. Have you even felt disconnected or isolated while streaming?

e. Are there any social aspects or interactions you engage in while streaming, such as discussing episodes online or with friends?

f. How do social connections or interactions both online and offline impact your decision to stream?

6. Desired Interactions and Features

a. Are there any specific social or collaborative elements you would like to see integrated into streaming services?
b. How would these interactions or features enhance your overall streaming experience?

7. Unnullified Desires and Limitations

a. Are there any limitations that prevent you from feeling more connected while streaming?
b. How would overcoming these limitations improve your streaming experience?

8. Future Expectations

a. How do you envision the future of streaming services in terms of enhancing connection and engagement?
b. What changes or improvements would you like to see in the streaming industry to address the issue of connection while streaming?
c. Do you think there is a demand for more interactive or communal experiences while streaming TV shows?
a. Is there anything else you would like to add or share regarding the topic of feeling more connected while streaming?
b. Thank you for your valuable time and valuable insights.

9. Closing

A.3   Website Prototype

Figma Board Link: https://www.figma.com/file/lPpEiLZ2ToU8lomqDV0iT2/website?type=design&node-id=0%3A1&mode=design&t=RBUpCPa8TZNTuyld-1

A.4   Mobile Application Prototype

Figma Board Link: https://www.figma.com/file/LmMIYUAerMAA5vnIMW86bd/Mobile-App?type=design&node-id=39%3A10&mode=design&t=lialG1OK6YHMHri4-1

A.5   Evaluation – Observation Questions
1. Can you describe your initial impression of the app and its main features?
2. How did you find the experience of seeing comments based on the timestamp of other viewers' posts?
3. Did the comments from other viewers enhance your viewing experience? If yes, how? If not, why?
4. Did the comments help you discover new perspectives or insights about the show or movie you were watching?
5. How would you rate the app's user interface and ease of navigation while using it alongside streaming platforms?
6. What additional features or improvements would you suggest making the app more engaging or user-friendly?
7. Did you ever feel overwhelmed by the number of comments or found it challenging to keep up with the conversation? If yes, how do you think this could be addressed?
8. Did the comments ever contain spoilers or influence your viewing experience negatively? How do you think this could be mitigated?

9. In what ways did the app make you feel more connected to other viewers or create a sense of community?
10. How likely are you to continue using the app in the future?
11. Is there anything else you would like to share about your experience using the app?