Proposal for A New Set of Hands-on Courses in Computer Science

Connection Between the Twitch User Interface and the Development of Parasocial Relationships

A Thesis Prospectus
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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

With the advent of the internet and social media, people have been more interconnected than ever before. As of July 2022, there were more than 5 billion people that use the internet and 4.7 billion social media users ("Internet and social media", 2022). The internet has embedded itself into daily life, with everything from business to teaching being accomplished virtually. As society pivots towards incorporating a more virtual existence, the intricacies of online interactions should be observed because with new avenues for interaction comes new forms of negative interactions. In particular, the inherent anonymity aspect on the internet is one factor that can cause people to behave in an anti-social way (Christopherson, 2007). An example of negative behavior resulting from anonymity is "intensifying racial, religious, or other hatred" (p. 3051). And victims of online harassment can experience mental health impacts ranging from "distress, shame, and panic to anxiety, self-harm, and attempted suicide" (Stevens et al., 2021, p. 374). Therefore, it's important to study how and why virtual communication occurs to help prevent negative interactions. Doing so will reveal insights into facilitating online communication and allow smoother development of internet platforms.

The proposed STS research examines a particular kind of interaction that can occur over the internet. Namely, it delves into how parasocial relationships (one-sided relationships) can develop on livestreaming platforms such as Twitch.tv. The website's user interface will be studied to determine if they foster the formation of these types of interactions.

It's important for software developers to be mindful of the kinds of behaviors they are affecting with their software products such as a user interface. They should understand how to design effective software that fulfills their intended purposes, and for that reason need to be familiar with the development tools at their disposal. The technical topic proposes a new set of

computer science courses which provides hands-on experience working with common software frameworks such as UX design tools. College graduates entering the industry for the first time should be better prepared to contribute to internet applications which sculpt the nature of online interaction.

Technical Topic

The current Computer Science curriculum at UVA offers a wide variety of courses focused on different topics in the computer science field. The required core CS classes teach foundational knowledge such as common data structures and algorithms. Then, there are the elective courses which provide a broad overview of a particular CS discipline such as machine learning or computer networks. Courses can be project-based and revolve around building a semester-long project using the course concepts.

The content in many CS courses is more on the theoretical side and exercises students' knowledge of course material. In particular, many courses tend to focus on teaching the fundamental concepts of a CS subject and go into less detail on practical applications. For example, a course like CS 4457: Computer Networks teaches about common internet protocols such as TCP, HTTP, MAC. And while this course does a good job of providing a high level overview of the subject of the internet, it does not provide much practice using common network tools (e.g. nmap, PuTTY) as they are used in a real world working environment. Rather, most assignments have students implement the protocols and concepts they learned in class or answer conceptual questions. However, there should be more emphasis on providing students with hands-on experience working with practical tools that they would likely encounter in the CS workplace. In particular, some web development tools popular in the industry such as Javascript, Node.js, React are not currently taught in detail in any of the courses here ("*Stack Overflow*

Survey", 2021). There should be more course options with a primary focus on getting students acquainted with frameworks and technologies such as these to supplement the theoretical coursework.

A problem with the current curriculum is that during the semester, if students are focused on coursework and other endeavors outside of the classroom, they will have less time for training their skillset (e.g. learning new programming languages). Offering additional practical courses, would mitigate this problem as it would allow students to learn new tools/skills which they can then include on their resume, while concurrently gaining credits towards their degree. This relieves students of having to prioritize between personal development and academic work. It also expands students' toolbelt and better prepares them when applying for jobs.

The proposed solution is a new set of courses that will allow students to get hands-on experience working with common frameworks and techniques in the computer science field, similar to the CS 3240: Advanced Software Development Techniques course offered here at UVA (McBurney & Sherriff, 2022). The courses are all structured in a similar way: composed of learning the core concepts of the framework and then applying these concepts in a semester long project. One core theme for these courses is being well structured, providing abundant resources for students to become acquainted with a specific technology. The course objective is to teach the fundamentals for a framework so that students can utilize this new technology in their future career. Additional adjustments should be made to these courses to facilitate independent and honest learning. The technical portion will outline the structure of such a course in a detailed syllabus. The syllabus will list course objectives, coursework requirements, and logistics. The technical paper will also discuss reasoning for the course design choices as well as limitations and areas for improvement.

STS Topic

Background

Livestreaming refers to broadcasting video content that is occurring in real-time over the internet. Its rise to popularity occurs shortly after online video sharing platforms such as YouTube took off in the early 2000s. Today, one of the most popular streaming platforms in the world is Twitch.tv, which had an estimated average of 2.78 million concurrent viewers in 2021 and over 50 thousand partnered streamers ("Twitch Statistics", n.d.). Although focused mainly on gaming content, the service also offers a variety of IRL (in real life) content such as traveling, cooking, musical, and other non-game centered activities.

For streamers, livestreaming can be a way of relieving stress and a way to improve self-confidence (Ravarion, 2021). Some people want to provide entertainment and challenge themselves by participating in livestreaming. Others may stream in hopes to become successful on the platform and create a career out of it, as it can be quite lucrative with the top streamers making upwards of millions (Miceli & Tsiaoussidis, 2022).

Viewers, on the other hand, may prefer livestreaming to other forms of online entertainment for a multitude of reasons. One reason is due to the "real-time" aspect of livestreaming. Events playing out in real time means that there tends to be more "unscripted" content, resembling face-to-face interaction, and this results in a higher degree of authenticity than what is found in edited, recorded video (Ang et al., 2018). People like being able to see "behind the curtain" as the content is usually unscripted making it feel more "real and intimate" ("Psychology behind live video", 2016). The suspense and FOMO (fear of missing out) aspects also help to motivate people to watch livestreams. In addition, there are tens of thousands of

Twitch streams (dubbed channels) airing at any one point resulting in a variety of genres which makes streaming something that appeals to a broad audience ("Twitch Statistics", n.d.).

For both streamers and viewers, another major appeal of livestreaming is the strong focal point on being a part of a community which is centered around the streamer. And there are plenty of ways that a viewer can participate: There is a chat room which is the primary way that viewers can interact with the streamer, a subscription and donation link for viewers to use to support their favorite streamers and unlock subscriber emotes and badges, a clipping feature allowing anyone to extract highlight moments from a stream to share on social media, etc. However, there exists an inherent one-to-many relationship between a streamer and viewers, and viewers can only communicate with the streamer through digital means. This imbalance gives rise to parasocial relationships. While usually harmless and normal, these relationships can get out of hand and become a dangerous obsession, with overly invested fans resorting to stalking and harassing streamers (Browning & Hill, 2022). For the viewers themselves, if parasocial relationships replace real-life ones, they can contribute to "anxiety, loneliness, and social isolation" (Martin, 2022).

It's crucial to understand how or if these relationships are exacerbated in any way on livestreaming platforms, so in the future, counter measures can be implemented. This leads to the research question: How do user interface tools on Twitch affect the development of parasocial relationships between streamers and viewers?

Literature Review

Horton and Richard Wohl (1956) are the first to provide a definition for a "para-social interaction" between an audience and popular media figures such as actors. They describe such an interaction as "one-sided, nondialectical, controlled by the performer, and not susceptible of

mutual development" (p. 215). The performer will speak to an audience as if it was a face-to-face interaction with a similar cadence and tone. This in turn will create the illusion that audience "know[s] such a persona in somewhat the same way they know their chosen friends" (p. 216). This kind of interaction is common on livestreaming platforms such as Twitch as viewers tune in and get to know all about a single personality while that personality knows very little about their viewers. However, this relationship between streamer and viewer can be seen as one that isn't completely one-sided like the one in Horton and Richard Wohl where audiences are watching a personality through a TV. Kowert and Daniel (2021) argue that the dynamic between the viewer and performer on Twitch is "one-and-a-half way" rather than one-way as seen in a traditional parasocial relationship. The reason for this difference is because there is increased potential for reciprocation from the performer when viewers interact with the performer through the available online tools such as the chat room, or on third party social media such as Discord. The authors also describe the nature of parasocial relationships (PSRs) with streamers as a "unique mix of wishful identification, emotional engagement, community affiliation, and fandom". They suggest that the definition of PSRs be updated in the context of livestreams. PSRs aren't inherently bad and can be a source of community and social connection for isolated individuals (Hoffner & Bond, 2022). For the streamer, this can also strengthen their brand image and popularity which can lead to greater monetary profits in the form of subscriptions and donations (Wohn et al, 2018).

Wohn et al. (2019) corroborates this claim and argue that viewers will be "more inclined to subscribe if the streamers develop relationships with them" who will stay subscribed based on the "emotional and digital rewards" they receive in return. Through their interviews with

donators, they concluded that these viewers have developed a parasocial relationship with streamers and that motivates them to watch more and donate money.

Research suggests that streamer attributes and personality is a major cause of parasocial phenomena and that viewer characteristics play a smaller role (McLaughlin & Wohn, 2021). Specifically, the strongest predictors were interpersonal attractiveness and direct interaction between streamer and viewer. Additionally, Jodén & Strandell (2022) suggest that if online interaction resembles that of offline interaction, viewer engagement increases, and they develop parasocial attachment. Current research seems to focus more on how the social aspects of livestreaming (streamer/viewer behavior) affect the development of parasocial relationships but little research has been done for how the technical aspects of a livestreaming platform play a role. Therefore, this research will focus on analyzing the platform tools and interface to determine their effect on parasocial behavior.

Methodology

To address the research question, the Actor Network theory framework would be useful for this analysis of human (streamers and viewers) and nonhuman (user interface) actants. In particular, academic sources that define the values that these user interface tools embody would need to be collected. Then, each tool will be discussed to determine their effect on users, how they shape the Twitch ecosystem as a whole, and their contribution to parasocial relationships. Before this, sources which define the causes of parasocial relationships will be found to form a measure to classify how strongly the tools affect parasocial behavior

User interface tools that will be explored are the subscription and donation system and its gamification elements, the chat box, external links to social media, clipping and video playback

tools. For each of these tools, document sources will be searched for to determine the behaviors that they promote, and then classified whether that would cause a parasocial interaction. Some keywords used to find these sources will be: “Gamification Engagement”, “Twitch Chat”, “Parasocial Twitch”, “Online community twitch”, “Viewer Engagement”.

In addition to document analysis, surveys will be sent out to the broad internet (e.g. via Reddit, Discord, email) targeting Twitch viewers which contain questions asking to rate each tool and how that has affected their viewing habits and perception of the streamer. The results of the surveys will be analyzed to see if there are any prevalent patterns in how the tools affect a viewer’s engagement with a Twitch stream. Analysis will involve filtering out invalid data and categorizing answers to each question.

Conclusion

The research into parasocial relationships on Twitch.tv should reveal the subtle influences that technology has on users of the system as well as the human values embodied in that technology that caused it to be designed as it is. The technical research will explain a way to teach students how to control the design of the technology to embody certain values and accomplish specific purposes. With a better education and mastery over technology, the structure of the internet can be meticulously designed to promote positive virtual experiences.

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