Improving the Online Video Chat Experience

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Abstract. With the recent proliferation of netbooks and tablets with webcams transforming oneself virtually is easier than ever before. However, the software used for such devices like video chat programs and online role playing do little to enhance the connectedness of the users involved. In this paper, we present Touch Live Connect (TLC), a product concept for an enhanced video chat experience that is aimed towards improving the online shared experience. TLC enhances the online experience by enabling people to do activities together in video mode. Users watch online videos together, transform to different backgrounds and also perform multi-way chat. TLC can also detect user motions and appropriately enhance the environment of the chat. This helps people emulate the face to face experience beyond just chatting and makes them feel connected. We developed three prototypes of the product concept and tested them on sets of users, and conclude that (1) Users feel more connected by sharing experiences rather than just seeing visual representation of self, (2)Amplification of human gestures over video is an important feature to improve video communication and (3) Users find a handheld tablet as most useful device for video communication and television as least useful.

Keywords: Online collaboration, sharing, virtual relationships, video chat.

1 Introduction

An increasing number of people are choosing video chatting over e-mails and telephone calls to stay in touch with family and friends at a distance. Webcams are becoming ubiquitous on powerful computing platforms such as laptops and smart phones. Video chat programs provide a richer sense of presence than other forms of distant communication, yet a need still exists for a more enhanced video chat experience to make users feel more connected. Part of the problem with most existing video chat software is that users cannot partake in social activities together. In addition, users cannot physically touch while communicating via video chat, and facial expressions or body posture may be missed or misinterpreted. Users do not get the sense that they are present in the same environment and may not feel as though they are sharing the same space and experiences. Consequently, there is a need for a video chat program which can help bridge these gaps and make video chat users feel more connected.

Many studies have been performed on the use of video chat and video conferencing programs for informal and formal communication. According to

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IJsselsteijn et al., "videoconferencing or shared virtual environments are based on providing a mix of both the physical and social components, i.e., a sense of being there together" [1]. Aspects of virtual worlds (computer-based simulated environments were users can interact) could be applied to video chat programs to provide users with a greater sense of being present in the same environment [2]. Other studies have found that internet users enjoy sharing videos and watching content together [3, 4], and that media is more enjoyable when watching it synchronously with others [5]. Shamma et al. found evidence that video sharing online can help users feel closer and more connected to their peers [6]. These findings show that there is great potential for enhanced features to improve social communication and connectedness while video chatting.

Among the most popular video chat programs used today are Skype, Google Video Chat, TokBox, and iChat. Skype allows any PC-to-PC call to become a video chat as long as users have a webcam and has become a popular choice because of its high cross-platform compatibility. However, Skype does not have many additional enhanced video chat features like some other programs do. Google Video Chat has become a popular option because of its seamless integration with Gmail, but like Skype, does not have many additional enhanced video chat features. i-Chat is the default chat application for Mac OS X. This program does have enhanced features such as multi-user video chat and the ability to share and view files, but it can only be used on systems with Mac OS X. TokBox is a web-based application where users login and initiate video chats through their web browser. TokBox has become popular because it can be integrated with other services such as Facebook to start quick video calls. In addition, TokBox allows for up to 20 users to video chat at the same time [7]. While these video chat programs are widely used and provide useful services and features, there is still a lack of focus on shared experiences and increased connectedness.

The goal of this paper is to propose a solution to overcome the limitations of existing video chat software. We have designed a product concept, Touch Live Connect (TLC), a novel video chat software which makes users feel more connected though the addition of enhanced features. The features of TLC are aimed at increasing co-presence and connectedness and include multi-user chat, synchronously watching video, sharing a virtual environment, and emotion/motion detection. The emotion/motion feature captures user's simple emotions and gestures and adds them to the environment using smiley icons and other notations. Through this exercise, we are able to draw insight on requirements for a video chat solution.

In subsequent sections of this paper we will: describe the process used to design TLC, discuss the design elements and features of TLC in detail, share methods and results of user testing, provide insight into limitations of TLC, and finally summarize our conclusions.

2 Design Process

We followed the process of user interaction development to conceptualize a solution to improve the online sharing experience. We believe this concept also encompasses exchanging personal information and communicating emotions more effectively using

technology since this is the basis of relationships. In this section, we describe the various stages of our design process and our insights and improvements to our concept from them.

2.1 Storyboarding

Our design process began with storyboarding, in which we created scenarios related to our product concept being a touch based software for video chat for a tablet PC or equivalent. We used the storyboarding technique to illustrate exactly why and how users would benefit from our software. The storyboards depicted the four major tasks including users watching a video online together, users interacting in the same background, users adding multiple friends to the video chat, and users sharing emotion/motion messages to one another. Figure 1 illustrates that by using the TLC interface to perform video chat and by applying the change background function, the users should potentially experience themselves video-chatting within a single new environment. This exercise helped us realize situations where shared experiences were amiss and helped us define features for our next step, the paper prototype.

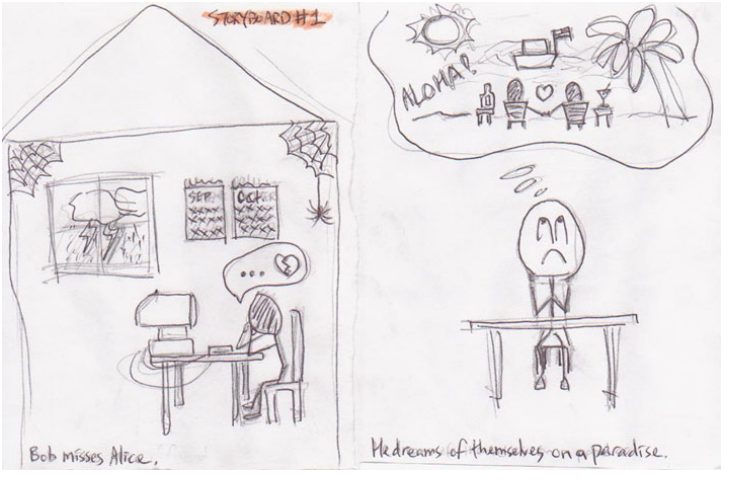

Fig. 1. The image above shows part of a storyboard depicting users interacting on TLC

2.2 Paper Prototype

In order to get a better sense of how the product will look and how users will navigate the screens, we created a paper prototype of the TLC software. Our testing comprised of the user interacting with the paper interface to perform a video chat. This included the user logging in, browsing his/her friends list and placing a call. The major tasks included - (1) Watching a video with a friend while performing video chat, (2) Changing the background and environment of users in a video chat session, (3) Adding more people and performing multi-way video chat, and finally (4) Expressing emotions on video chat, and the camera detecting and enhancing the video chat experience.

Testing the prototype Before testing our paper prototype with users, we wrote up an instruction sheet that gave an introduction to the TLC software. The instruction sheet explained that the system was a touch screen interface and that the user could use his/her fingers to navigate the screen. A list of tasks for the user to perform was also included in the instruction sheet. For each task, we gave detailed information about what we wanted the user to do. For example, we gave the user a Username and Password to use when they log in.

We also told the user to find a specific friend to connect to (Figure 2) and a specific video to watch. By giving them detailed instructions such as this, we were able to have the screens we needed to show them the functionality of our product without having to have a screen for every single option that was available.

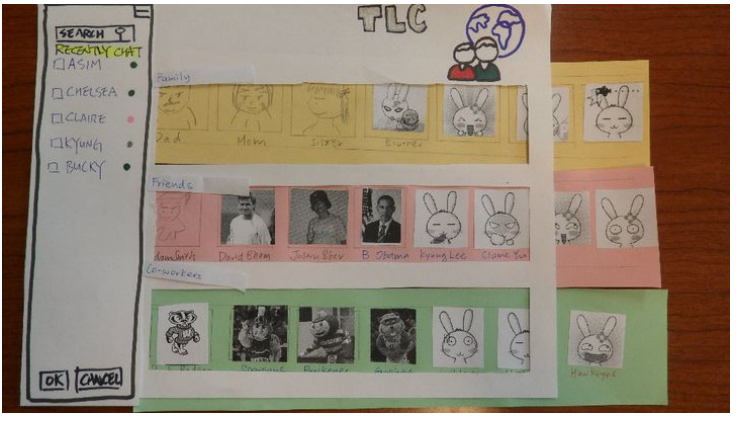

Fig. 2. Friend list page after log in of paper prototype. There are multiple friends categories and the user can search through friends by scrolling the screen to the left**.**

We recruited three participants for testing our initial paper prototype and gave them the instruction sheet to read over before they started. We placed the prototype in front of them and had them follow the instructions on the sheet. The participants were told to "Think Aloud" while they were testing the prototype so we would know what they were thinking as they were using the prototype. One member of the team took notes on what the participant did while interacting with the prototype and if there were areas where the participant struggled to use the prototype. After the participant completed the tasks, we gave them a short evaluation sheet that asked about usefulness, desirability of features, usability, layout, and ease of navigation.

After the preliminary testing of our paper prototype, several issues came to light that needed to be addressed during further design phases. The first and foremost of these issues was the question of general flow of screens and usability. To address this issue, we needed to reexamine our planned physical prototype concept from the ground up. In order to log in or use the text box function, we needed a touch-pad keyboard. Furthermore, we decided to create message windows asking the user for confirmation to proceed further, which would minimize mistakes made by the user. Also, we needed to have a way to transition better from one function to the next such

as adding close buttons to the screens. We also added the log off function button in order to end the program from any of the intermittent screens.

2.3 Video Prototype

The next step in the design process was to create a video prototype to get a better sense of how users may actually use TLC in a realistic environment. The video prototype we created consisted of four main tasks: changing the background, watching a video, adding a friend, and performing Emotion-Motion. Our first step was to determine the sequence in which we wanted to show the tasks being performed. We then focused on the scenario to create a smooth transition between the different major tasks and show the distinct features of each task. We chose to show the users interacting with the product in a home environment because we felt this was the context that most users would be in while using TLC. We tried to show the touch screen capabilities and the navigation through the screens by showing a finger pressing the screen for each feature of the product. Through our prototype [8], we were clearly able to show the usage scenarios, brief interface navigation and video in video communication modes.

After creating the video prototype, we sent the video to multiple (four) participants to watch the video and fill out evaluation form. Through creating this video prototype and getting feedback from viewers, we learned that we want the product to be capable of working on a multitude of different devices from televisions to computers to iPads. Further, we learned a lot about how the screens will actually look to the users and where the videos will be placed. We created many of the TLC software screens (static) which helped us to plan what the menus in the interactive prototype will look like. We also brainstormed some additional features that would enhance the video chat experience even further. These features include 3D chat, using videos with background sounds for change background, and having an accessory device with a heat sensor or vibrating feature that would enhance Emotion-Motion.

2.4 Interactive Prototype

The next step in the design process was to create an interactive prototype. The interactive prototype allowed us to create a semi-functioning interface and navigational framework for TLC to see where design flaws may still lie. In the absence of actual video chat software developing realistic software was a challenge. Simulating the video chat was important to make the interactive prototype more realistic. Eventually, we found a program called Plays for Certain which could play live webcam feed during a PowerPoint presentation. Figure 3 shows the interactive prototype we made using PowerPoint. We inserted controls such as active text boxes and check boxes to make the prototype more interactive. We also assigned ‘actions’ to buttons to navigate from slide to slide. In addition, we embedded YouTube video for the ‘Watch a Video’ feature. Overall, the interactive prototype turned out very realistic and allowed users to perform the four major tasks: watch a video, change background, add a friend, and Emotion/Motion.

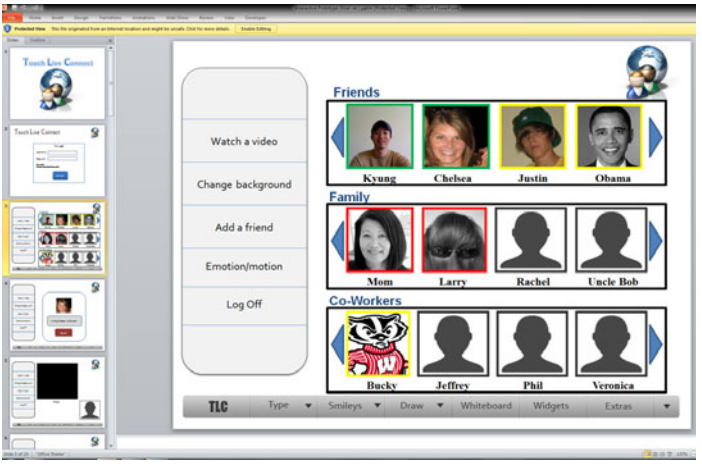

Fig. 3. Interactive prototype in PowerPoint

3 User Testing

The final step in our design process was to perform user testing of the final prototype on a set of participants in a controlled manner. Since this testing was more comprehensive than the testing of our previous two prototypes, we describe it in a separate section.

We performed two separate tests. The first test was a pre-testing performed on a nine users to understand the requirements of the video chatting solution without the bias of our software. The second test was performed on five users and was after testing with TLC interactive prototype. The main questions we wanted to answer during our user testing (post-testing) were:

1. Is the interface intuitive and easy to navigate?
2. Which features of TLC are novel and useful compared to other video chat software?
3. What is your device type preference to use video chat software on?

3.1 Participants

The target participants for TLC were people who were familiar with basic computer operation knowledge and interested in enhanced features for online video chatting. Participants were limited to individuals who use video chat software on a regular basis or at least several times a month. Before deciding who would be the participants, an online questionnaire was set up to gain a better understanding of how and why people use video chat programs, and we then chose participants who fulfilled our requirements of using online chatting software on regular basis.

3.2 Methods

We tested our interactive prototype with a small set (five) of users on a laptop and big projector screen (to simulate TV/home environment). The participants were given an instruction sheet with a list of tasks to perform and were asked to use the "Think Aloud" method. We filled out an observation form based on the feedback given by the participants using "Think Aloud" while performing the tasks. The participants then filled a second questionnaire after they finished testing the prototype. It was a detailed set of questions regarding preferences of features as well as questions regarding the interface and each of the tasks.

4 Results

4.1 Results from the Survey before Using the Prototype

The pre-testing results give us some insight on the usage patterns and requirements from modern video chatting software. The results show that users want to do more activities together online rather more than any other feature.

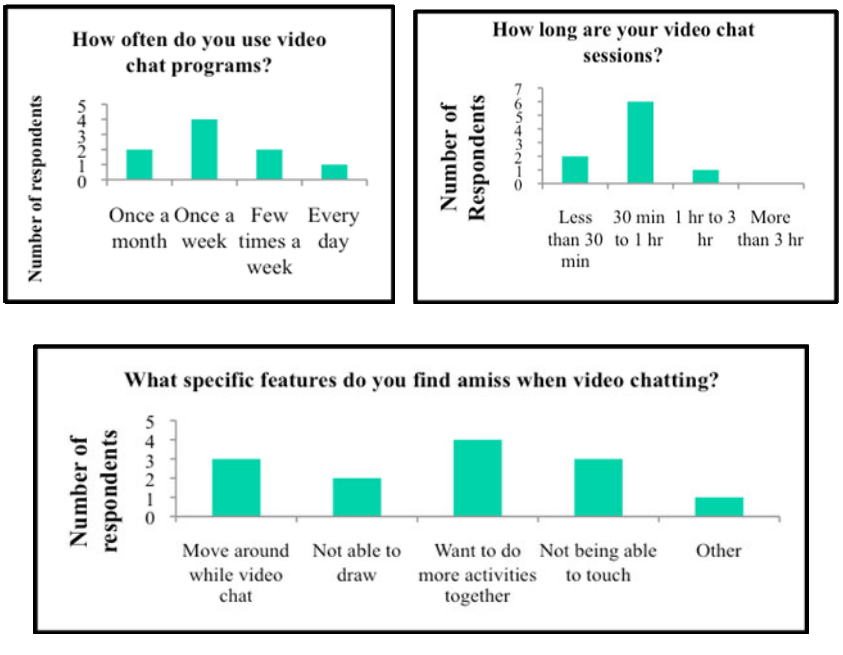

Fig. 4. Results

4.2 Results after Using the Prototype

To summarize our post-testing results, users found features of TLC novel and useful and agreed that a product like TLC will make the users feel more connected.

After having the five participants complete the assigned tasks on the TLC software interactive prototype, we had them complete an online post-user questionnaire. All of the participants were highly satisfied after using the software (average 8.4/10). The participants found the interface to be intuitive and easy to navigate (7.6/10). They also found the software to be responsive (average 8.6/10) and simple to use (average 8.6/10). The participants rated the four features they tested in the interactive prototype in terms of novelty and usefulness. The "Emotion/Motion" and "Watch a Video" features were rated as most novel (average 8.6/10 and 8.4/10, respectively). One participant commented, "The expression detector was very interesting, it adds another novel feature." The "Change Background" feature was rated as least novel (average 7/10). The "Multi-User" and "Watch a Video" features were also rated as the most useful (average 8.8/10 and 8.4/10, respectively). The "Change Background" feature was rated as least useful (average 5.8/10).

The post-user questionnaire also provided us with interesting comments. All of the participants felt the software will enhance the video chat experience. Three of the five participants would use this software with their family and friends. Four of the five participants thought that the flow of screens was in the right order. The participant who did not think the flow of screens was correct commented, "the back button from background page did not go back to regular video chat." All but one of the participants felt that touch screen navigation would be more effective than mouse/keystroke navigation. Three of the participants chose i-Pad or an equivalent device as their preferred platform, while two of the participants chose laptop. However, none of the users chose TV as their preferred platform. When asked how this software compared to their current video software, one participant commented, "this one is more fancy." Another commented, "similar to Tokbox but has more features." Other comments included, "most video chat software are integrated with keyboard chat like messenger or Google chat" and "interface is well put together and clear, has a lot of potential."

Discussion. One of our design goals is to allow users to easily navigate without confusion and maintain interoperability of different tasks using our software. Thinking about the product design, there are some aspects of the study that can be used to improve it. From our post-user evaluation testing, all five users mentioned that there should be a "tab" function on the login screen. They felt uncomfortable having to set the cursor each time to enter text for login information. In addition, the check boxes were not properly labeled on 'Emotion/Motion' task page for users to interact smoothly. This was fixed immediately during the study.

As for the change background feature, an advanced video chat would have been possible if we were able to have the appearance of the users outlined on the background for better visual effects and better feel of the feature. Lastly, the horizontal menu located at the bottom had no function features and we can extend our prototype to add some features from writing on the screen. Thus, the feedback from users was extremely valuable and we believe simplicity will be the key for the next generation technology.

5 Discussion

In this section, we discuss the design implications from our design process and its limitations. The process of designing TLC provided us with valuable feedback on the navigation, interface design and features for video chat software.

Navigation. Through our design process we observed that users significantly value unspoken norms for software navigation. For example, all five participants tried to use tab key to enter the password after they entered the login. Most users tried to close the windows for different screens by searching for close boxes on the top right side of the screens. These examples emphasize that software design for new platforms should incorporate these norms to avoid navigational "surprises" that may affect ease of navigation of the software. Following consistency of navigation styles through the series of tasks made the user more comfortable with the interface and generally they liked it better.

User Interface. Through our design process, we observed that users were barely able to remember information from previous screens. For example, for the Emotion/Motion feature, users were not able to recollect what emotions have been turned on. Having a system status visibility while enabling/disabling important features is useful. This also makes the "recognition rather than recall" design heuristic significant.

Features. Users wanted to use text based chatting while using these advanced features. We had similar feedback of adding text chatting feature in our early testing of the paper prototype, but we had decided to only focus on fewer/most novel features for our prototypes. We believe having additional screens for text chatting will be useful since users still like to associate traditional text based chatting with video chat. Throughout the design process, users stressed the interoperability of features. Many users wanted to use multiple features together like the changed background and watching videos.

Preferred Device. Users stressed mobility as an important issue while performing video chat and almost all users preferred a tablet-based device to perform video chat. Also, none of the users found television as a useful medium for video chatting.

Limitations. In this sub-section, we discuss the limitations of our prototype and our testing.

1. Our prototype was not tested on a touch-based device. This is because we were not able to arrange a touch based computer with a web camera.
2. We only tested the interactive prototype on a laptop and large screen (to emulate TV experience). We were unable to test the prototype across a variety of devices. This did not help users get a clear picture on what devices the user will prefer with the prototype although many users indicated that they will prefer a device that allows them mobility.
3. We were unable to insert more than one live webcam feed into the PowerPoint interactive prototype. Therefore, participants did not get as realistic of an experience as they could have if more web cam feeds could have been introduced.

6 Conclusion

In this paper, we presented TLC, a video-chatting product concept for enhanced video chat experience which makes users feel more connected. Through our design process, prototypes, and questionnaire results we show that there is scope for improvement and innovation in the current video chat programs and significant amount of improvements can be achieved by using simple software based improvements and feature additions. We were able to conclude that a favorable video chatting device should provide the users with mobility, amplify user gestures and signals and let users perform various activities online to make them feel more connected.

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