The Happy Healing House

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Background

A lengthy hospitalization might be inevitable after a serious accident, and it is common for patients to experience boredom or restlessness after a few days. [4] provided evidence that experiencing meaningful relationships is important in alleviating boredom and reducing social isolation during hospital stay. Access to social support and interaction with peers and fellow patients is also desirable by patients [5]. Some studies had evaluated factors and practical solutions to boredom during hospital stays. [4] provided an overview of factors, such as natural scenes, hospital layout, and clinician's communication skills, that contribute to the feeling of boredom. [4] also reported interesting finding that smoking bans may be associated with boredom in smokers because of the decrease in dopamine levels [2]. [3] evaluated the boredom proneness among mentally ill patients and found that boredom was highly associated with patients with depression. [3] also suggested that boredom proneness was not associated with age, gender or length of stay. To align with the content of the course (CIS 700), we were also interested at existing solutions that utilize technology to address the problem of boredom, lonliness, or social isolation during hospital stays. However, limited technological solutions to alleviate boredom have been found in literature. [1] reported the use of virtual reality (VR) as a useful distraction and relaxation for pediatric patients to increase happiness in a hospital setting. There is also limited solutions that specifically promote social interaction among patients or health care providers via technology during hospital stays. Therefore, we propose a real-time voice chat platform, The Happy Healing House, for patients to socialize with each other during their hospital stays.

Methodology

We utilized Amazon Chime SDK to support real-time voice and video. We also took advantage of the open-source code that used the Chime SDK UI Component Library to build our react meeting website. To ensure only authorized users can access the chat room, we connected the server to a MySQL database to hold all authorized users' credentials. We modified the UI and some features of the react website to suit the hospital setting. For deployment of the website, we used Cerbot, an open-source software tool, to enable HTTPS, which is a secure communication protocol that encrypts data in transit between the client and the server, on our website that could be accessed using HTTP on port 443. More specifically, both the front-end and back-end of our website uses HTTPS. In addition to HTTPS, we also added TLS that provides an extra layer of security on top of HTTPS. By using HTTPS and TLS, we ensure that the data cannot be intercepted, read or modified by unauthorized parties.

Clicking on the link of the deployed The Happy Healing House website, a log in page will show up that prompts users to enter their role (Patient, Patient Companion, Nurse/Doctor, or Prefer Not to Say), their name, and date of birth to verify their credential. Then authorized users will have the option to enter a nickname to use in the chat so that their real name will not be revealed to other users. Authorized users can choose to enter different chat rooms for different discussion topics once logged in. We currently support three types of chat rooms that we set up on Amazon Chime: pre-surgery, post-surgery, and all-purpose. In

the meeting room, users have the option to turn on their camera or stay on voice only.

Discussion

Privacy is always a big concern in healthcare. We thought about solutions to address privacy issues on our website, but we were only able to realize a portion of them on our demo website, and we want to discuss other solutions here. First of all, we set the rules to identify authorized users. The goal of building this website is to provide ways to gain social interactions during the hospital stays. For this goal, patients can only access the voice/video channels while staying in the hospital. To achieve this, the database we implemented that stores users' credential should be connected to the database for the patient portal so that the website can verify the patients' visiting status. Family can assess the website if they have been added as guest by the patient. Furthermore, the website access should be restricted to the hospital internet for security reason.

We also thought about some add-on features to this website in addition to the real-time voice/video. The website can be made support posting or status sharing among authorized users. However, more cautions should be taken if enabling this features because users would leave more footprints on the internet.

Contribution

Zheng Han:

1. Set up AWS credential, S3 bucket, and Amazon Chime SDK.

2. Set up and run website locally.

3. Modified website UI and features and opened real-time voice and video channels on Amazon Chime SDK.

4. Deployed website.

5. Recorded the demo video.

Tianyi Wei:

1. Set up AWS credential, S3 bucket, and Amazon Chime SDK.

2. Set up and website locally.

3. Wrote the report.

4. Recorded the demo video.

Bibliography

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