Introduction

Project Atmos is a social media application that allows users to host custom chat rooms with themed music and live background wallpapers. Users can create and host custom "Spheres", which are musical chat and hangout rooms with voice, video and text chat functionality. Spheres can be customized with animated backgrounds and music playlists.

Atmos-Sphere aims to reduce feelings of social isolation and loneliness by providing users with an engaging, atmos-spheric social media app for interacting with their friends and family. Furthermore, Atmos is also targetting the enterprise, encouraging organizations and businesses to reach out and communicate with their audience on the Atmos platform.

Feelings of loneliness borne from social isolation/withdrawal during the COVID-19 pandemic is the main issue that project Atmos aims to challenge. Such feelings can easily lead to mood disorders and mental health issues such as depression and anxiety. Project Atmos will provide these people with a means to communicate and socialize in not just a pandemic scenario, but any scenario where one is physically isolated and lacks social interaction. The chill vibes and social environment of Atmos will help to improve the mental health of its users, bringing about positive emotions, and reducing feeling of isolation and loneliness.

Hypothesis

It is hypothesized that using the Atmos web app will cause improvements in the feelings of loneliness experienced by users living under COVID-induced social isolation. It is believed that the music and background animations will have a calming effect on users, and the online chat will provide an avenue for users to socially interact in a relaxed environment reducing their feelings of social isolation and elevating their mood.

Methods

ATMOS' core focus is to create a social and relaxing environment for users

The project will focus on 3 main aspects: Music, Environment, and Users. The main functionality of the system is that it should be a hangout for people to socialize and/or listen to music.

The system will be built using React, the JavaScript library, and Material-UI for the frontend UI components like buttons and tables. The backend will be a Postgresql database that will connect to the frontend. Specific APIs will need to be installed to handle playing audio on the site. Regular playlists can be handled using the React Audio Player API, but ATMOS is also planned to allow Spotify and Apple Music, so there will need to be 2 unique APIs. These will be the React Spotify API and the Apple Music.js API.

The development of ATMOS will be split into various parts. First will be to lay down the foundation of the site and then set up a basic sphere and the main page to look for spheres. Next will be to implement music support which can just be the regular playlist for now as the Spotify and Apple support can come later. The addition of animated backgrounds and a chat will come afterwards. When all is set for a basic user's sphere, then account creation, management, and administrative privileges is next. Lastly will be to connect everything to the backend database so the core functionalities are all functional and can be tested.

Background Research

Throughout the initiation phase the team's motivation of building the project was engaged towards sound arguments. Atmos-Sphere is a hedonistic tool that sprung up based on facts from peer reviewed journals and educational thesis answering the fundamental question on how the application enhances user's mental and emotional health on daily basis. The answer spans through multiple dimensions ranging from music, communication, socialization, and environment. These aspects are the essence of the conducted research.

Music therapists work in an interdisciplinary team to create a positive dynamism and impact on human brains based on musical tones and frequencies to address mental health challenges and enhances well-being. Atmos-Sphere was influenced based on therapist's categorization of user-preferred music styles where melody creates a framework of information to be learned and supports memory whereas harmony is used for verbalization purposes and rhythm is to increase body's vibrations and cue user's speech and movements, thus, music functions as a mnemonic device.[1] Youtube live have tried to take advantage of music therapy

to make it an ultimate feature for its users to destress and relax, however, the flaw was the lack of automation and the playlist was standard and infinite with mixed random music that is not personalized and quit often out of topic. User's experience was not the best as not everyone can get hooked to it. Atmos-Sphere takes advantage of music therapy by providing a unique experience for each user based on their mood and motivation.

Communication is pivotal to solve all types of challenges therefore, it elucidates in various forms. Online chatting brings an implicit therapeutic well-being. As stated by Torous: "online communication and the ability to connect with others may be an important feature of social media, especially for individuals living with highly stigmatizing health conditions such as serious mental disorders". [2] Discord provides an audio chat feature where users connect to discuss with each other on their discretion. The downside of discord is that it cannot be personalized in terms of sharing special moments therefore, Atmos-Sphere provides the possibility to stream movies and videos while chatting, this rises communication intimacy and forges a strong virtual peer-to-peer bond.

Based on the research conducted the environment can affect users in one way or the other, people's mental health.[3] Environment is a major trigger of emotions therefore Atmos-Sphere gave it a special attention by creating different dynamic themes depending on user's mood, the selected theme will induce a vibration tone that brings an emotional relief to end users. Discord have tried to address this option however it provided yet a static version that can only be customized by the user and the options are limited, therefore, the lack of original interactivity made users experience less enjoyable. Atmos-Sphere brings a new colorful RGB touch to the atmospheric ambiance by implementing a smart way of displaying backgrounds based on current moods and musical playlist.

Evaluation

The Atmos-Sphere study is designed to investigate the mood of participants as they use the Atmos social media app. In particular, Atmos-Sphere is interested in the relationship between social isolation and feelings of loneliness. The goal of the Atmos sphere app is to reduce the social isolation of study participants by providing an engaging online social experience. It is believed that if study participants feel less socially isolated, through the use of the Atmos app, then their feelings of loneliness will be reduced. Along these lines, the plan is to execute a comprehensive and robust data collection scheme that tackles the question from two angles: qualitatively, and quantitatively. Thusly, data will be collected in 3 formats: by questionnaire, by interview, and finally by web analytics.

Questionnaire

A custom, self-administered questionnaire will be created containing both open-ended and close-ended questions. Close-ended questions will be be ideal for generating quantitative data points that can be analyzed using statistical and data analysis techniques, whereas open-ended questions will provide a qualitative view. The questionnaire will be based on tried-and-true clinical screening tools such as the PHQ-9, MFQ, and GAD-7 questionniares. [4] [5] [6] These are clinical tools that are commonly used to screen for mental health issues such as depression and anxiety. The Atmos questionnaire will take a lighter approach - it will not be designed to screen for mental health issues, but rather to test for mood, social isolation, and feelings of loneliness. Nonetheless, The questions will be in a similar format and wording as the questions in the clinical questionnaires.

Interviews

Upon completion of the study, an exit interview will be conducted with each study partipant. The exit interview will contain mainly open-ended questions focusing on participants experience in using the Atmos app. These interviews will contribute to the qualitative data collected from the open-ended Atmos questionnaire questions. The interview, in combination with the self-administered questionnaire, will provide one-on-one, qualitative and quantitative data from the perspective of the study participant.

Web Analytics

Finally, web page statistics will be collected throughout the duration of the study. Metrics such as clicks, time spent viewing components, and more will be collected from the app. This data will be quantitative, and will provide a valuable perspective on the level of engagment that Atmos was able to acheive with its users. The data will be used to construct metrics for the learnability, ease-of-use, and level of engagement that users have with a social media app in the Atmos format.

Study Format

The format of the study will have participants engage with the Atmos app thrice over the course of a week, in short sessions of 5-10 minutes, followed by administering the Atmos questionnaire at the end of each session. The triplet combination of questionnaires, interviews, and web analytics will provide multiple perspectives on the data. The goal is to acheive data and methodological triangulation, which will create a more robust model of the effect that Atmos has on feelings of social isolation and loneliness. Each of the 3 investigatory techniques chosen for the study will provide a unique perspective, the combination of which will be provide the best understanding of Atmos' users. This study will provide the ground-work for future endeavors of Atmos-Sphere and improvements to the Atmos social media platform.

Data Analysis

Analysis of the data obtained in both the open ended and closed ended questionaires will be primarily evaluated on:

- How much the application has affected the users?
- If the application has affected the user in a positive or negative way?
- If the application has affected the user positively, will the user continue to use the application or will they seek an alternative?
- If the application has affected the user negatively:
- What user needs did the application not meet?
- what alternative will the user seek to meet their needs?

As such, based upon the content of the responses received, we can determine the overall effect the application has on the users in both qualitive and quantitive terms. And through that analysis, the hypothesis will be proved/disproved.

Biggest Risks

Risk 1: Copyright Strikes

One of the primary features of ATMOS is that to act as a social hub with user-selected background music. An obvious risk that will arise with this is that if users can choose what songs they would like in their sphere, they might choose copyrighted music and backgrounds if they are to choose external music which are not featured on the spotify platform. This isn't necessarily bad since spheres aren't monetized, but corporations will still want money for letting people listen to their music or use their content as backgrounds, which may lead to arising legal issues which may demand significant resources to resolve. Thus it may be neccesary for the addition of advertisements during applicaiton usage to appease the big corporations. This might be harder to handle for when video chat is implemented since that will add more legality issues when people start streaming movies.

Risk 2: Explicit Content

There is a risk of malicous users using the application to post inappriate content,which can ruin the experience for other users especially if underage users are exposed to such content. An example of thismaybe be if spheres with content not suitable of children are created. ATMOSwill need clear rules in the terms and conditions stating that either the sitecannot be used for this 18+ content or if explicit content is allowed, certain rules and regulations will need to be set on what is acceptable content and the some restrictions will be required to ensure users under the age of 18 are not exposed to any explicit content. Violators which post explicit content featuring physical blood, gore, and death, as well as illegal pornography such as sexual content featuring children/minors will be banned and handled with harsher consequences.

Risk 3: Distribution of Illegal Content

Distribution of illegal content such as the may bring about a plethora of legal issues:

- Distribution of pirated games, movies, and other medias or the use of pirated media on any sphere.
- Distribution of content that is illegal according to Canadian and International Laws or the use of this content on any sphere.
- Distribution of illegal hacking software such as trojans, malware, or other viruses that are cybercrimes.

Risk 4: Distributed Denial of Service (DDoS) Attacks

Distributed Denial of Service (DDoS) Attacks pose a serious threat to ATMOS servers and may be conducted by malicous users who have the intent of disrupting application services. Thus appropriate security protocols and malware defense software should be deployed in order to prevent such attacks from succeeding.

References

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[4]: https://patient.info/doctor/patient-health-questionnaire-phq-9

[5]: https://www.corc.uk.net/outcome-experience-measures/mood-and-feelings-questionnaire/

[6]: https://patient.info/doctor/generalised-anxiety-disorder-assessment-gad-7