

MANAGING USER STRESS ASSOCIATED WITH SOCIAL NETWORKING LOCATION DISCLOSURE: A PROPOSED FRAMEWORK.

**Sumaira Memon¹, Kamran Taj Pathan², Sorath Mahar³, Rafique Ahmed Vighio⁴*

¹AHS Bukhari Postgraduate Centre of Information and Communication Technology, Faculty of Engineering and Technology, University of Sindh, Pakistan.

ORCID: 0009-0005-9109-1642

²AHS Bukhari Postgraduate Centre of Information and Communication Technology, Faculty of Engineering and Technology, University of Sindh, Pakistan.

³Faculty of Engineering, Science and Technology, Computer Science Department, Iqra University, Main Campus Karachi.

⁴Beijing University of Posts and Telecommunications, China.

**Corresponding Author:* (sumaira.memon@scholars.usindh.edu.pk)

Article Info



This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license

<https://creativecommons.org/licenses/by/4.0>

Abstract

Social media has become the most important part of the modern society. A number of social sites have been developed which allow sharing posts, status and locations etc. thereby providing an easy access for users to see other people's activities such as what location they are at and what they are doing. This activity engages people in social comparison in which the people compare their lives with others on the basis of information (status, location, etc.) posted by them on the social media sites. This often leads to making people think about their life as less idealized/privileged, thereby causing stress. Our study suggests that among others, one of the triggers of stress is fake location sharing by the users. So our research has proposed Framework for stress management which address issue of fake location and also allow user to share real location.it also provide about contents along with other associated information based on real user location. Usability study of framework has also been conducted.

Keywords:

Social Networking Sites, Location Based Social Networking, Facebook, Global Positioning System.

1. Introduction:

A number of social sites have been developed for academia and business purposes, for sharing posts, status and locations, such as Wikipedia[1] , LinkedIn [2], Hi5[3], Facebook [4] etc. As access to internet through smart phones has become common place, people are likely to spend more time on social networking usage. Nowadays technologies seem to take over peoples' lives which place people at high risk of negative physical and psychological health effects resulting from stress. In 2014, a new survey conducted by Pew Research Center in America[5] finds that the Facebook remains the most familiar social media site whereas its growth has slowed, while the level of user engagement with social networking sites has increased over the past year. A lot of research has been conducted over this and the recent research[6]concludes that spending more time on social networking sites can raise user's stress levels, which may lead to mental disorder. While many factors like expensive vacations sharing, new houses, new cars, sharing of pictures, sharing of happy relationships, etc. may cause stress, our study suggests that sharing of fake location by the users on the social networking sites is also one of the main triggers of stress.

On other side a lot of research work does also exists on tracking user's location while facilitating the user a level of control over what is shared with others. According to report[7], the most popular commercial location-sharing services are Foursquare [8], Facebook Places[4] and Yelp[9]. These services allow users to manually check-in and share their location with their friends[10], but these services do not provide mechanism for cross checking the fake/original/non correct location entered by the users.

Our research proposes a framework which is aimed at reducing the stress caused by sharing a fake location by the social media users. The proposed framework provides mechanisms:

- a. which don't allow users to update their fake location but a GPS-sensed location (a real user location) and
- b. Provides information about offers along with their prices based on the actual user location.

This paper is organized as follows: Section:2 presents a Related works. Section:3 discusses Data Analysis Section 4 describes the development and Design of our proposed Framework. Section 5 presents Evaluation of Framework. Section 6 provides conclusions and future work.

2. Related work:

Social Media keep us up-to-date to the new trends in society and provide many things including new movies, music, fashion, books, or other products. However, its increased use may also cause stress among the users. Social networking sites fulfill social-emotional need of the users besides Informational need as the user assumes their friends on SNS to be connected in direct and interpersonal manners. The usefulness of social-emotional feedback shows that there are side effects on person's behavior of online friends [11].further related works organized into 3 parts as follow: (1) SNS Effect ,(2)SNS Effects Mentally and (3) Location sharing practices among user

2.1 SNS EFFECTS:

Numbers of studies have proven that social networking sites - specifically Facebook can have countable effects on well-being of the users [12]. Some of the researchers from the university of Michigan[13] assessed usage of Facebook for two week, and found that the more the users use Facebook, the more negativity they face regarding their day-to-day activities and the more time spend on social site causes higher level of dissatisfaction with their overall life.

2.2 SNS EFFECTS MENTALLY:

Researcher from the University of Gothenburg[14] found that people who use computer continuously can suffer from stress, sleeping disorder and depression. The lead author Sara Thomas said “more use of computer develops a link between computer with stress, sleep disturbances and depression witnessed by young adults”. It has been seen that mostly people spend more time at computer than planned; this causes difficulty for managing time for other activities and personal needs and also becomes the motive of bad ergonomics and mental overload[15]. The study concluded that the use of social networking sites leads to interference between work and private life, the feeling of never being free; unreturned call or message led to overburden and feelings of blameworthy.

2.3 LOCATION SHARING PRACTICES AMONG USERS:

One of the primary attributes of SNS is sharing location information and interacting with location relevant contents. Recently, a number of SNSs (Facebook, Foursquare, Gowalla) specify a clear method to enable users to share their location information, so that user can explore locations easily, can tag their friend or can meet up with one of their nearby friends which may have the same interest. An online location-based service named loopt[16] uses tracking model that allows the user to see others’ location. It also provides a check-in feature and map-based view for user-specified window of time. Another tracking model called GPS tracking model[16] is used by Google latitude whereas Google latitude is also location-based service in which the user picks level of granularity they share their locations. However, the check-in model which allows the user to create „name“ and „venues“ for sharing their current location with their friends has been used by many of the most popular commercial location-sharing services such as Foursquare, Facebook Places and Gowalla [17]. Thus, it provides encouragement to the user to share their location information. The disclosure of user’s location may cause unforeseen problems. Yahoo [18] narrates four type of crimes that resulted from sharing location using check-in feature in Foursquare such as home invasions (because of a check-in indicating a victim is not at home) and muggings (because of a check-in letting muggers know the exact location to rob a victim at)[18]. While user have availability of control mechanism through which user can control the access of check-in, and gives the user a chance to share her location information actively rather than rationalizing location privacy issue. A number of vulnerabilities are there in LBSN which can expose user’s location information without user permission. The literature suggests that there exists a large body of literature on location-based services discussing use of location for navigation and other purposes; however, no research has been found in the literature that studies the impact of sharing of fake location on users’

behavior. Our research focuses on this issue and proposes the solution to lessen the stress caused by sharing fake location,

3. Data Analysis:

The main argument of our research is that sharing fake location on SNS causes stress among the users. To validate this hypothesis, we shared a fake location on the Facebook that “I am having breakfast at Mac Donald”, the comments received on this status suggested that people felt stressed and we then conducted a pilot study, One hundred and eighty seven questionnaires were initially distributed among participants via internet using Google form. 139 were female participants and 48 male participants. From female participants, 121 were students and remaining were working women. From male participants, 32 were students and 16 were working men and age group of both male & female were between 15 to 30 years. After pilot study we conduct survey to validate our research problem and questionnaire had been emailed to users“ through Gmail, Yahoo and SNS (Facebook). This time we shared 350 questionnaires and were able to get 253 responses, from which 68.5% females and 31.5% males. Convenience sampling, which is also called availability sampling method, has been implied in which the availability of participants can implicate in the sampled group, typically convenient for participant. Questionnaire has been designed by following Nominal-polytomous close ended question type. We had followed 4 point scale to narrow down the choice, whereas the respondents have more than two unordered options

Finding of our survey was

- a. 51.3 percent peoples has joined SNS because of updating picture and updating location with friends
- b. 92.6 percent peoples agreed if they could use only one SNS that can be Facebook from this choice of participant we specified our field to use FB as test case
- c. 41.2 percent said they login from smart phone as it is easy to access
- d. 72.2 percent said they use Social networking site to see update about everything this means people are keenly using social networking site,
- e. 60 percent participant said sometimes they shared their location.
- f. Whereas 61.1 percent said they shared location to show up their friend from this answer our research step up
- g. 43 percent participant also admit that they often shared fake location to excite their friends,
- h. 47.4 percent also agreed that they see the location of their friend on SNS. The shared picture/documents/statuses do also affect participants
- i. 60% participant shared their feeling by saying that they become depressed
- j. 26.7 percent participants also admit that they start comparing their life with their friends
- k. 48.9percent shared. Their reaction that they become stress while reading friends status of location sharing 33.3 percent also said they start thinking again & again.

4. Stress Management Framework: The design and development of stress management framework whose main responsibility is to provide mechanisms to cope with stress caused by updating a fake location by any of the users of social media group. Mechanisms provided ensure that

- (1) The user does not update the location other than where he or she is physically available and
- (2) Provide contents along with their prices at a real location of the user.

4.1 The Proposed Architecture of Stress Management Framework:

Figure 1 shows the architecture of the proposed approach, which has four components:

- (1) Status Sharing Module,
- (2) Location Sharing Module,
- (3) Place Information and
- (4) Context Information of place.

We briefly discuss each of them below.

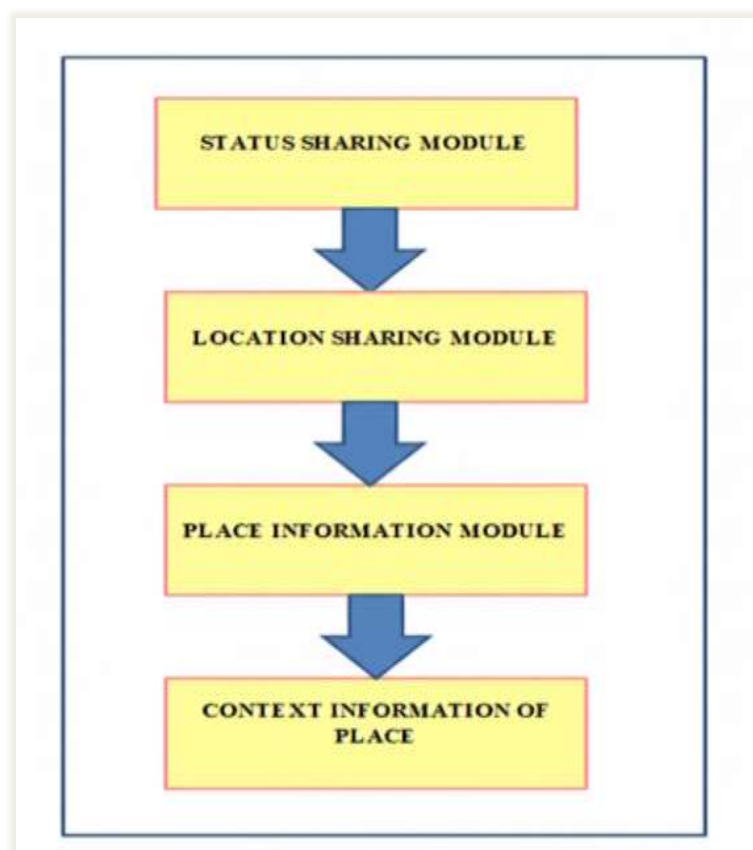


Figure 1: Stress Management Framework

4.1.1 STATUS SHARING MODULE

This module allows the user to share his / her status that may include sharing of location, pictures, etc.

4.1.2 LOCATION SHARING MODULE:

From status sharing module if the user selects to update location, this module detects geo-location of the user and updates location information.

ALGORITHM OF THE LOCATION SHARING MODULE

Step1: Start

Step2: Load page

Step3: Read Username Password

Step4: Show Homepage

Step5:

```

If {User=Update Location
  If
    {Loc=Restaurant
    Then: Update Loc with Offers
    }
  }

```

Else if: Update Loc automatically

Step6: Exit

4.1.3 PLACE INFORMATION MODULE:

Based on the place of the user, this module fetches information about various offers available at the place along with price ranges from the database. For example, if the place of user is hotel, information related to deals / offers available at hotel along prices against each of the offers is displayed.

4.1.4 CONTEXT INFORMATION OF PLACE MODULE:

This module gives information about the updated place showing deals and offers choice of different ranges according to the context.

4.2 DATAFLOW DIAGRAM OF FRAMEWORK:

In Figure:2 Dataflow Diagram of proposed framework has been shown. it represent the flow of data with stress management framework, the framework allow user to sign in ID via input username and password after signing- in user profile user may update status (Location, Activity, Picture),User upload location status framework uses Google API for updating location, then status will be updated “Enjoying meal at Restaurant” restaurant information will be taken from Restaurant Database and the shared location will updated with Restaurant name and their offers and meals.

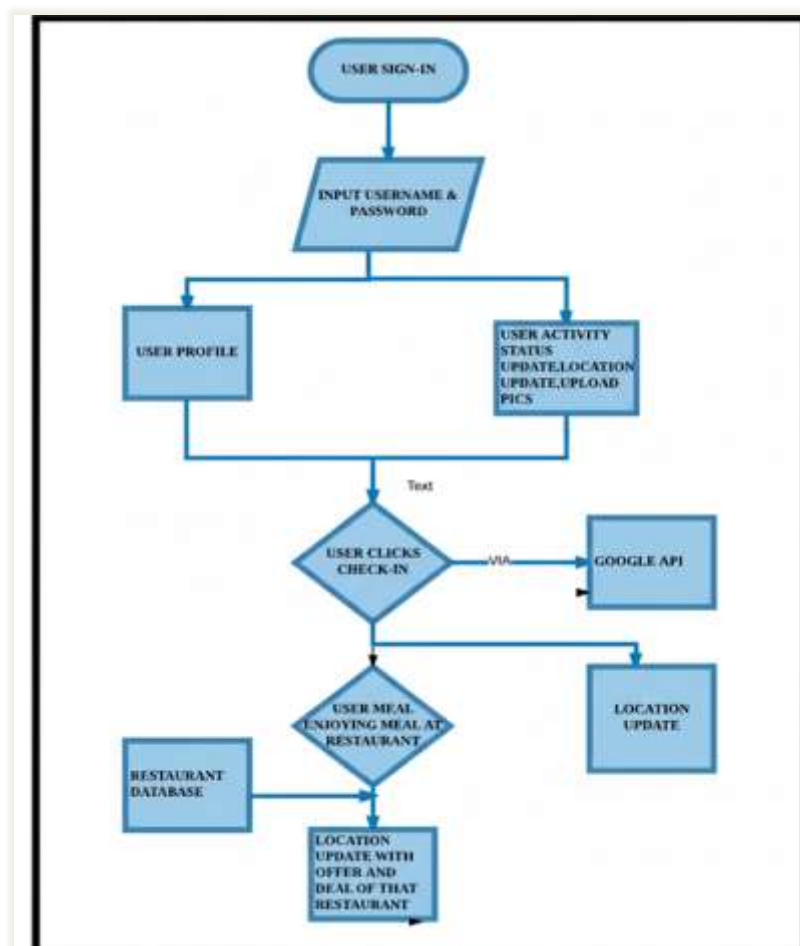


Figure 2: Dataflow Diagram of Stress Management Framework

4.3 TOOLS USED FOR IMPLEMENTATION OF STRESS MANAGEMENT FRAMEWORK:

The prototype implementation of the proposed framework has been done under Wamp environment. Wamp is a windows-based platform for development of web based applications and comes with the following software tools.

1. Apache web server
2. MySQL database
3. PHP

4.3.1 APACHE WEB SERVER: The Apache web server is Hypertext transfer protocol (http) server where webpages are deployed. The framework webpages have been deployed on this server and in response to a user request; the server serves the requested pages of framework[19].

4.3.2 PHP: PHP is acronym for Hypertext Preprocessor. it is a server scripting language, which is used to develop dynamic pages. The prototype framework involves a number of dynamic pages which have been developed using PHP[20].

4.3.3 SQL: SQL is acronym for Structured Query Language. For database management, we have used SQL database. In response to the user requests, the PHP scripts of the framework connect to this database and perform queries based on the user requests and then resultant pages are served to the users[21].

4.4 TEST CASE 1: USERS' LOCATION UPDATED AUTOMATICALLY:

The figure: 3 is a snapshot of screen displaying the location of the user. Test case shows that if the user wants to update location, it is updated automatically by clicking check in button. It may be noted the Google map has been updated in the prototype for obtaining user's location. The user doesn't have to bother to write place name and then to update location, all he has to do is to click the button and the correct location is automatically updated. This test case has limitations, such as: if a user is actually enjoying expensive meals or a vacation, it may also trigger stress. This limitation has been resolved via Test Case 2.

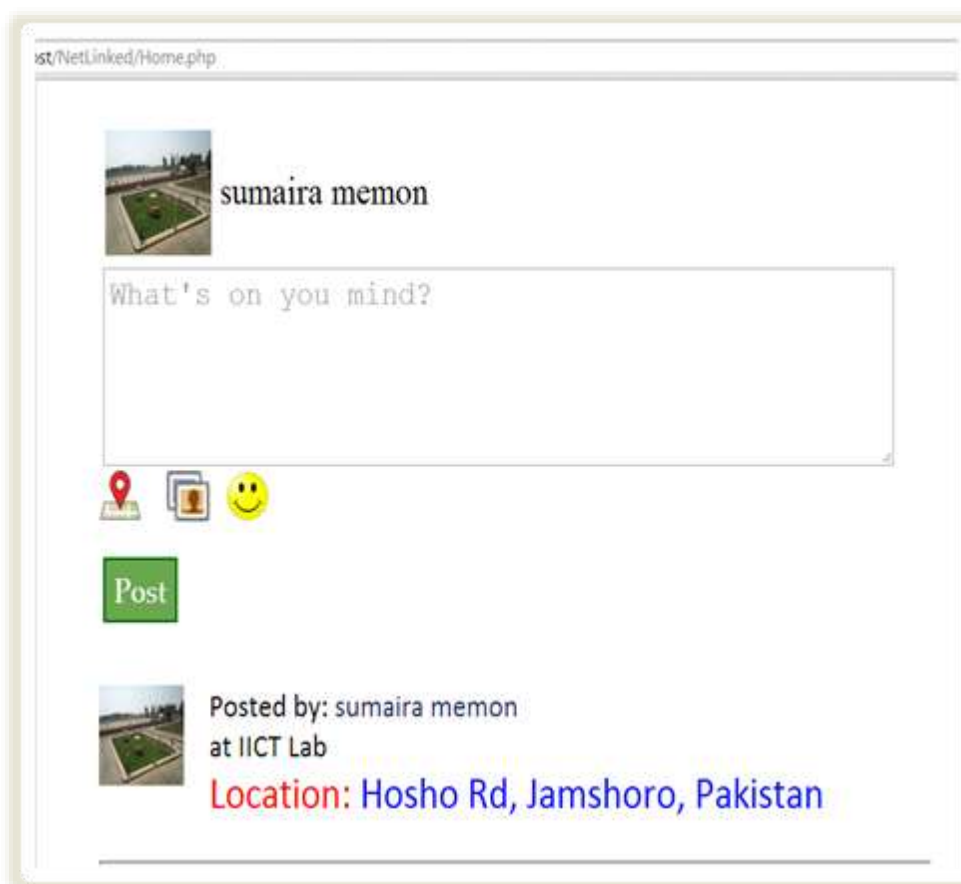


Figure 3: Status Update GUI Screen

4.5 TEST CASE 2: DISPLAY OF OFFERS ALONG WITH THEIR PRICES

The figure 4 is a snapshot displaying location of the user (e.g. Kolachi restaurant Khayaban-e-Iqbal, Karachi, Pakistan) along with restaurant menu, This test case addresses the limitation of Test Case 1, as

discussed in Section 4.4. Test Case 2 shows that if a user goes for an outing with a friend where they update their location, the menu/offers will also be updated, showing different choices of menu/offers according to prices. This allows another user to check the prices and see if they can afford to enjoy the same restaurant.

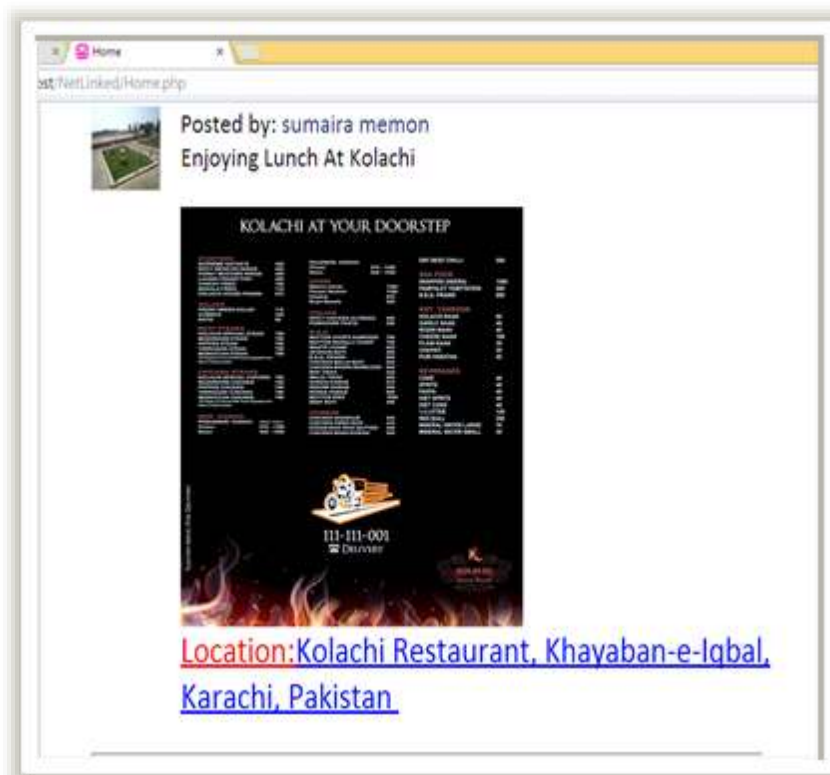


Figure 4: Someone Sharing Restaurant Menu along with Location

5. Evaluation:

The usability evaluation will give us assurance that the system is easy to use and the intended users are satisfied with the working of the proposed system. We recruited 160 participants from the university community. The participants were a combination of students and teachers. The background information about the participants is summarized in table:1.

Table 1: Information about Participant participates in Usability Evaluation

Gender	
Male	51.9
Female	48.1
Age	
Less than 18	40.6
18-23	20.6

24-29	25.6
Above 30	13.2
Education	
Student	86.8
Working	13.2

In order to perform the usability of our proposed system, we needed to install the WampServer which only runs on window OS. After installing the WampServer, we were able to run the proposed stress management framework from the local host.

5.1: Scenarios:

In order to test the proposed stress management framework we have selected a scenario with three different situations.

- a. In the first situation, we asked the participants to update their location information on the available social networking sites (i.e. Facebook), by choosing places from nearby venue list, here users were able to update their non-correct location.
- b. In the second situation, we asked the participants to update their location on our stress management framework. The user clicks check-in and his/her location has been updated automatically without user involvement.
- c. In third situation, we asked the participants s to update their location of some luxury restaurant by updating this type location our prototype has update location with restaurants deal/offers.

5.2: Test Procedure

We conducted the usability testing in the computer lab at IICT, university of Sindh, Jamshoro. After installing our proposed stress management framework on the PCs available in the computer lab. We started to demonstrate the working of our stress management framework to the participants we also explained to the participants that:

- a. Most of the users' update fake location to excite their friends.
- b. We explain the propose of this usability testing which is conducting usability evaluation to see their satisfaction with the proposed system not to test their knowledge

In the demo we explained to the participants that stress management framework is developed to decrease the stress level caused among social networking sites users based on sharing fake location. Then the user created their ID and passwords by signing up on the proposed stress management framework. Then the users used their ID and password to log in to their profile. In this prototype the users were able to update their status with location information. After testing our proposed system, we administrated an after scenario questionnaire to every participant to record their experience with the proposed system. The participants filled up the questionnaire

5.3: Results and discussion

The results obtained from the usability study are presented as the evaluation of the proposed approach. The usability result gives us an assurance that the system is easy to use and the intended users are satisfied with the way the system works. The data obtained from after scenario questionnaires which reflect the participant’s opinion about the overall usability and feasibility of the proposed system. The 5-step Likert scale is selected in this questionnaire to record user opinion score, in which 1 reflect the lowest score while 5 reflect the most satisfactory score.

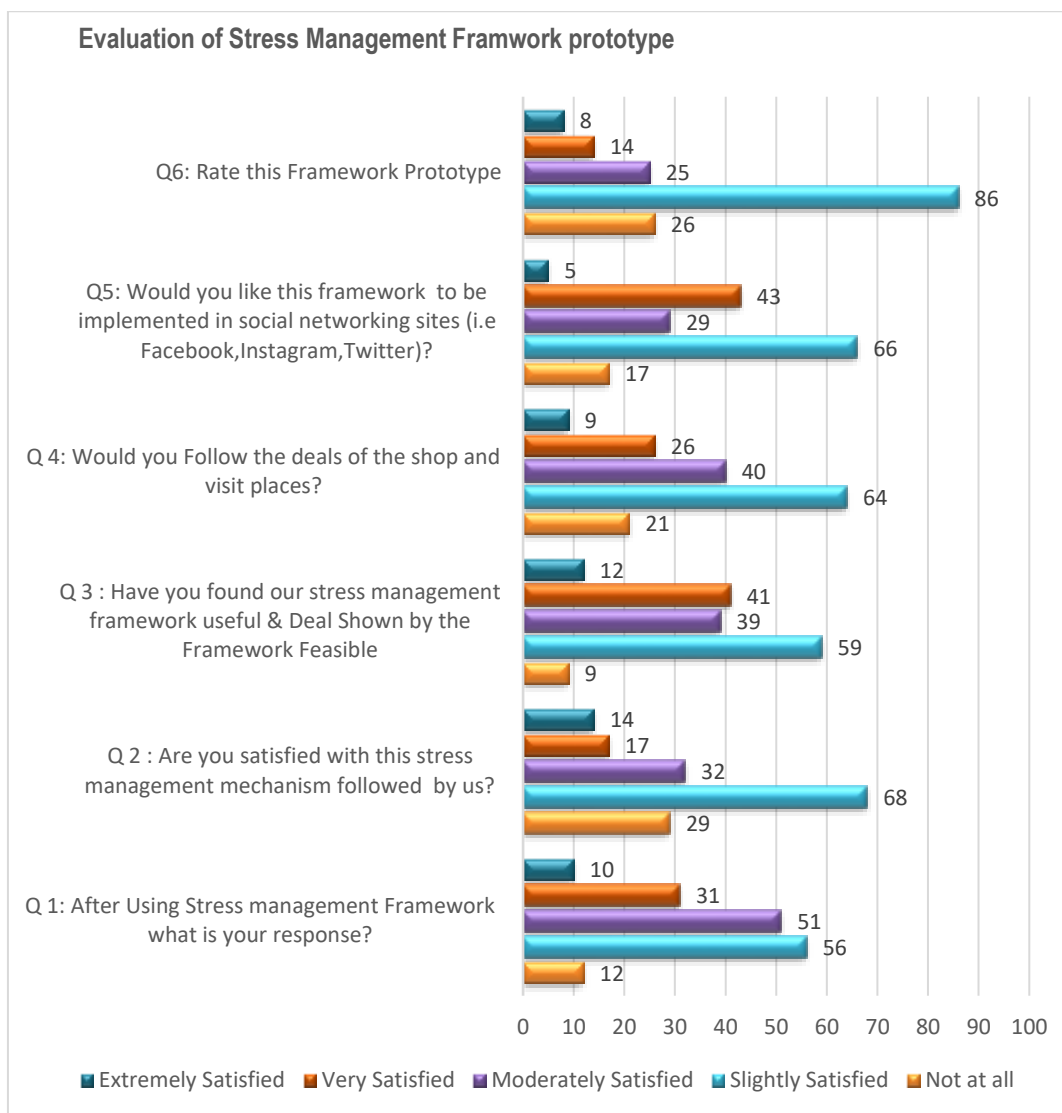


Figure 2: Results of Evaluation

6. Conclusion:

we carried out a research study in the field of social networking sites with an special focus on minimizing user stress caused by sharing fake location on the these sites by the users. The outcome of the proposed research is design and implementation of stress management framework, which provides the following features:

- a. Restricting the users from uploading a fake location: The framework provides mean that don't allow the users to upload fake location and ensures that the user updates location the where she is physically available.
- b. Displaying contents along with other associated information based on actual user location: The framework displays the information about what is available / being offered at user location. In case of restaurant as a user location, the information being displayed may include affordable items for many users and this may prove to be a motivation for the user to visit that place rather than feeling stressed due to class difference.

6.1 Future Direction

This research work can be extended by developing location aware newsfeed and integrating it to the proposed framework. Location aware newsfeed can reduce the stress at maximum point because location-aware newsfeed efficiently retrieves the relevant messages from his/her friends based on the locations and the messages to the partial extent.

7. References

- [1] “Wikipedia, the free encyclopedia.” https://en.wikipedia.org/wiki/Main_Page (accessed Sep. 18, 2025).
- [2] “LinkedIn: Log In or Sign Up.” <https://www.linkedin.com/> (accessed Sep. 18, 2025).
- [3] “hi5 - The social network for meeting new people.” <https://www.hi5.com/> (accessed Sep. 18, 2025).
- [4] “Facebook – log in or sign up.” <https://www.facebook.com/> (accessed Sep. 18, 2025).
- [5] S. Boulianne, C. P. Hoffmann, and M. Bossetta, “Social media platforms for politics: A comparison of Facebook, Instagram, Twitter, YouTube, Reddit, Snapchat, and WhatsApp,” *New Media Soc.*, 2024, doi: 10.1177/14614448241262415.
- [6] V. S. Nakshine, P. Thute, M. N. Khatib, and B. Sarkar, “Increased Screen Time as a Cause of Declining Physical, Psychological Health, and Sleep Patterns: A Literary Review,” 2022, doi: 10.7759/cureus.30051.
- [7] H. Jiang, J. Li, P. Zhao, F. Zeng, Z. Xiao, and A. Iyengar, “Location Privacy-preserving Mechanisms in Location-based Services,” *ACM Comput. Surv.*, vol. 54, no. 1, Jan. 2021, doi: 10.1145/3423165.
- [8] “The Future of Geospatial Technology | Foursquare.” <https://foursquare.com/> (accessed Sep. 18, 2025).
- [9] “Restaurants, Dentists, Bars, Beauty Salons, Doctors - Yelp.” <https://www.yelp.com/> (accessed Sep. 18, 2025).
- [10] H. Thenahandi, “The effects of self-service automation on customer experience during the check-in stage at Helsinki Vantaa airport,” 2023, Accessed: Sep. 18, 2025. [Online]. Available: <http://www.theseus.fi/handle/10024/790005>.
- [11] C. Davenport-Kellogg and H. Stevenson, “Social-Emotional Learning and Peer Support through Social Media,” *Int. J. Technol. Knowl. Soc.*, vol. 18, no. 1, pp. 23–34, 2020, doi: 10.18848/1832-3669/CGP/V18I01/23-34.
- [12] F. Angelini, G. Gini, C. Marino, and R. Van Den Eijnden, “Social media features, perceived group norms, and adolescents’ active social media use matter for perceived friendship quality,” *Front. Psychol.*, vol. 15, p. 1222907, Apr. 2024, doi: 10.3389/FPSYG.2024.1222907/BIBTEX.
- [13] A. M. Guess *et al.*, “How do social media feed algorithms affect attitudes and behavior in an election campaign?,” *Science (80-.)*, vol. 381, no. 6656, pp. 398–404, Jul. 2023, doi: 10.1126/SCIENCE.ABP9364.

- [14] M. Hussain, "Prevalence of Facebook Addiction , Narcissism and Sleep Disturbances Among PREVALENCE OF FACEBOOK ADDICTION , NARCISSISM AND SLEEP," no. August, 2025, doi: 10.5281/zenodo.16900522.
- [15] D. A. Adler *et al.*, "Burnout and the Quantified Workplace: Tensions around Personal Sensing Interventions for Stress in Resident Physicians," *Proc. ACM Human-Computer Interact.*, vol. 6, no. CSCW2, p. 430, Nov. 2022, doi: 10.1145/3555531.
- [16] K. K. Mohbey, G. Meena, and A. Indian, "Utilizing Location-based Social Networking to Suggest Travel Paths and Places of Interest," *2021 IEEE Int. Conf. Technol. Res. Innov. Betterment Soc. TRIBES 2021*, 2021, doi: 10.1109/TRIBES52498.2021.9751660.
- [17] A. Sabzali Yameqani and A. A. Alesheikh, "Enhancing Reverse Geocoding With Weather Data: Modeling Human Check-In Behavior in California and New York for Smart Cities," *Trans. GIS*, vol. 29, no. 3, p. e70059, May 2025, doi: 10.1111/TGIS.70059.
- [18] W. He, X. Liu, and M. Ren, "Location Cheating: A Security Challenge to Location-based Social Location Cheating: A Security Challenge to Location-based Social Network Services Network Services Location Cheating: A Security Challenge to Location-based Social Network Services," 2011, doi: 10.1109/ICDCS.2011.42.
- [19] S. Goyal, "Article ID: IJEET_12_05_013 Performance of a Web Service," *Int. J. Electr. Eng. Technol.*, vol. 12, no. 5, pp. 137–147, 2021, doi: 10.34218/IJEET.12.5.2021.013.
- [20] S. bin Uzayr, "PHP : The Ultimate Guide," Dec. 2022, doi: 10.1201/9781003308669.
- [21] Y. Bai, "SQL Server database programming with Java : concepts, designs and implementations," 2022.