Development of a Social Networking Service as a Web Application for use in the Education Sector

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Abstract - In today's world, social networking services are popular than ever. However, there isn't a social network that is used today at an adoption level that is similar to that of Facebook or Twitter in the education sector. Current social networking applications or services have a myriad of problems that go against a user's privacy and to make things even worse, inappropriate content widely made available on these social networking services make parents more hesitant to allow their children to log on to these sites in order to interact with their peers as part of their group coursework. Therefore, the objective of this paper is to develop a social networking web application that would resolve the grave issues centered around social networking services as of today. In pursuance of a social networking service that would create maximum utility to students and adolescents all over the world, it needs to be created after conducting interviews and surveys with them to the extent that the needs required by the targeted category of users are understood. Then, the design and the development of the service will be done with the results of the surveys in mind to make sure we comply with the users needs. With an initial prototype version up and running, we can develop the next version based on the feedback from users to ensure that the product satisfies the user's needs and resolves the issues faced by general social networking services today.

Keywords - *social, network, service, web, application, education, design, development.*

1. Introduction

Social Networking Services have emerged as one of the most important tools of the decade. However, most of the social networking services have reached at a scale where a myriad of problems seems to be persistent and common across all social networks. Some of these problems include but are not limited to identity theft, loss of user's privacy, impersonation of a user, theft of personal data and so on. Although there have been attempts to reduce these issues, it has not been successful. Therefore, it is essential to create a social networking service that would effectively reduce these issues and lead to an end product that is neat and hassle-free without having any of these issues as much as possible. In order to create our idea into fruition, we will call our social network Vsocial. The 'v' simply stands for a shortened

"we" and also brings about the origins of the service, that is, our university, Vellore Institute of Technology (VIT). Vsocial will have most of the features offered by a standard social network such as the ability to:

- add friends
- share content as well as images
- set a profile picture
- privately message friends
- share VIT-based data such as class numbers, branch of study

To make the definition or the idea of the social networking application more concrete, an explanation of Vsocial is as follows. Vsocial, VIT's exclusive social network, will let anyone all over the world register onto the social network, even if they aren't studying in VIT.

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Students from VIT will get a privilege by being able to share their VIT details among other students such as their classes, clubs, cgpa, registration numbers and more. Vsocial users will be able to make friends with anyone through a "Search for Friends" option, share content as well as images among their friends through a "Post" option, set profile pictures, and share user-related information as well. They can message friends privately through a "Messenger" platform.

With teachers against the use of social networks by their students in schools as a medium of communication/interaction, we plan to make Vsocial a social network that would directly fit into schools in an appropriate manner. Right now, many teachers are worry-some of the curriculums being implemented at present that incorporate technology such as social networking services to enable students and teachers to interact more conveniently [1]. However, based on statistics found in a paper, social networks are seen as a boon to students at a particular school with around 75% of all students in the school having a social network [1]. Also 60% of all students that do use a social network reportedly talk about education topics online with 50% talking about coursework to be more specific. [2] Some questions to be addressed are:

1. How can social networking sites used in an education environment be used for engaging the students?
2. How can social networking sites help students in completing their coursework?
3. How can students develop better teacher-student relationships through the use of a social network meant for the education environment?

From these questions, we thus see the need for a social network that will have to target the education sector that could resolve all these issues.

2. Literature Survey

A considerable measure of research has been done on Social Networking Services (SNS) because of its exponential development. The normal time spent by Facebook clients alone has expanded from 40 min in 2014 to 50 min [3]. Surveys demonstrates that individuals who persistently utilize Facebook tend to contrast their lives and others and see that others are in an ideal situation [3]. Therefore, the problems caused by these SNS's have been getting next to no consideration in spite of its commonness. Additionally, it has been discovered that both extraneous (handiness) and natural (pleasure) factors influence the inspiration to utilize data innovation frameworks [4]. The outcomes recommend that happiness is the most critical factor influencing the conduct of SNS clients. By improving clients' posting photographs, films, and weblogs, and sharing connections on their profiles, SNS specialist co-ops will have the capacity to influence clients and their companions to feel intrigued and have a ton of fun [4]. Facebook is a noteworthy interpersonal organization and starting at now it's development rate has begun to decrease. Purposes behind this watched mass migration run from basic weariness with the action of internet systems administration to a development toward different devices for long range interpersonal communication and correspondence, e. g., Twitter [5]. Taking a gander at SNSs as far as its genuine effect, for example, enhancing the advanced education encounter, it has neglected to do as such [5].

By and large SNSs are not seen as an instructive apparatus but rather for a little class with visit eye to eye gatherings, a SNS, it might expand the group initially framed in the physical classroom into an online space [6]. Essentially, The SNSs could additionally give understudies the opportunity to freely post and read each other's work, demonstrating ways to deal with the assignments and chances to give input [6]. The restricted or nonexistent eye to eye communication of separation training courses can make constructing a group of trainings and encouraging understudies' feeling of social nearness web-based testing [7]. In any case, protection is a critical factor to give clients a chance to embrace to another SNS and the collaboration of trust and security worry in long range interpersonal communication locales isn't yet comprehended to an adequate degree to permit exact displaying of conduct and movement [8]. For instance, Facebook individuals uncover more data, however MySpace individuals will probably broaden online connections past the limits of the long range informal communication website [8]. There are two sides to an interpersonal organization; from one viewpoint, informal community destinations may work as instruments through which individuals keep up significant associations with individuals they have known for quite a while and are sincerely near. Then again, organizing destinations may fill in as a stage to go after consideration [9].

There is a heap of advantages to having an account on Facebook in view of distributed research, for example,
- Facebook clients are more trusting than others.
- Facebook clients have all the closer connections.

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- Facebook clients get more social help than other individuals.
- Facebook clients are considerably more politically connected with than a great many people.
- Facebook resuscitates "lethargic" connections.
- Social systems administration locales are progressively used to stay aware of close social ties [10].

With a lot of giant SNSs existing in the market, there are very little SNSs that target niche markets. Taking a look at Vellore Institute of Technology (VIT) as a niche market, there isn't any social network that is dominating the web space as of now. A major problem that's found with students in a university is getting to know everyone in their class and that can be solved with a social networking platform that specifically targets the university as the niche market. Also, due to various ethical issues as discussed, the social network has to be developed for an efficient use by people to network with each other. This can be done by developing a social network that focuses on a minimalist approach i.e. by ensuring that there's no advertisements including articles or banners to distract the user. Likewise, by developing a mobile-first model of the site, a lot of users will be able to interact efficiently whenever they want. Evidently, this can also help with the reduction in the user's addiction to a SNS by letting the user focus on what's really required: social networking with the people they care about.

3. Methodology

3.1 Surveys and Interview Results

After conducting surveys with hundreds of students through Google Forms and other media, we attained the following results:
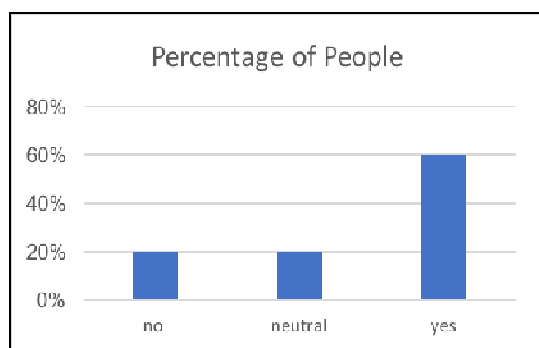

Fig. 1.   Survey Results for First Question

As Fig. 1 shows, the survey's first question asked user's whether a social networking site for the education sector would be necessary and almost 60% of them said they are which means that it is an essential service that needs to be developed.

After conducting interviews with several people, we found that most of them want a service that is modern-looking and sleek. They also want one that is capable on handheld devices with ease of use and speed being a priority.

3.2 Requirements

Therefore, to satisfy the user's needs, we found out that the following functional requirements need to be satisfied and implemented on Vsocial.

1) Signing Up: The user shall be able to sign up with details such as username, password, name, and email. They will be validated both on the client side and on the server-side. The username and email must be unique.

2) Logging In: The user shall be able to login with the correct username and password that were provided while signing up.

3) Logging Out: The user shall be able to log out from any page to destroy the session.

4) Post Messages / Upload Images: The user, after logging in, shall be able to share messages to their friends by posting content on the wall. They can upload images as well.

5) Change Profile Picture: The user shall be able to change their profile picture

6) Change Personal Info and VIT Details: The user shall be able to edit their information such as Personal Info (Name, Personal Email, Gender, Age, Phone Number, Address) and VIT Details (Registration Number, VIT Email, CGPA, Clubs/Chapters, Branch, Classes)

7) Search Friends: The user shall be able to search for friends by username.

8) Add Friends: The user shall be able to send friend requests to other users and also accept friend requests from other users.

9) Message Friends: The user shall be able to privately message their friends through the messenger module.

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Also, the Performance Requirements for Vsocial are:

10) Quick Access to all Modules: The user shall be able to quickly access other modules such as Messenger, Search, Home, Log Out on every page.

11) Responsive Web Design: With Bootstrap implementation, the web application should work for any screen size.

12) Dynamic Web Pages: Form Submissions will happen dynamically on the same page using Jquery AJAX.

In terms of design constraints, the design of the web application should be such that the server's CPU will not get overloaded with lots of users online simultaneously. The messenger module won't have messaging happening in real-time since it may lead to CPU overload. All the scripts and links are referred externally to reduce the load on the local server.

3.3 Design

As per the defined requirements, the proposed system will be a social networking website that will work on both desktop and mobile platforms with a user interface that will focus on readability. Each module of the system will be classified into an appropriate folder having the same name. For example, the login and signup modules will be present in the root folder. After the user logs in, it will redirect to a home folder which will consist of another set of files and folders that will provide the desired functionalities for the user.

In order to fulfill the requirements, vsocial will need to encompass the following modules or functionalities:

- Log In
- Sign Up
- Log Out
- Post Insertion
- Post Call (sorted by time of post)
- Settings update (Personal Info and VIT details)
- Settings call
- File upload (Photos)
- Profile Picture upload
- Check notification time update
- Friend Request
- Friend Accept
- Message friend
- Receive messages from friends
- Search for friends by username

- View profiles of friends (view their information and posts)

The following activity diagrams show how the functionalities in vsocial will be implemented.
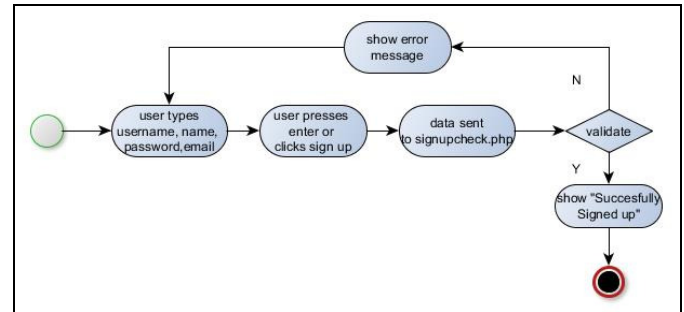

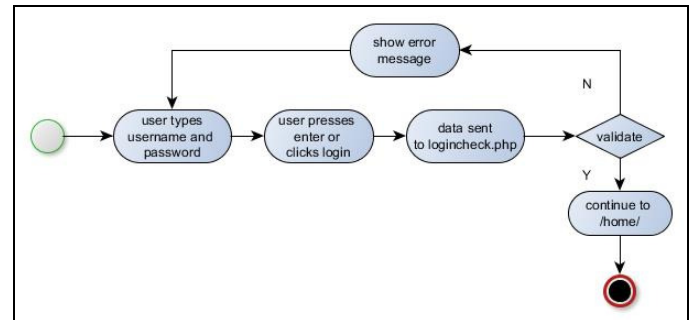Fig. 2.   Sign Up [Activity Diagram]

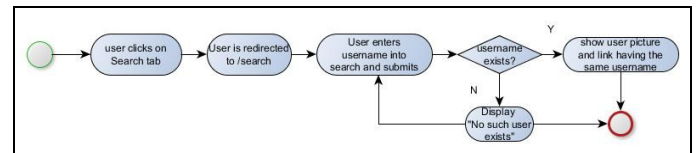Fig. 3.   Log In [Activity Diagram]

Fig. 4.   Search for a User [Activity Diagram]

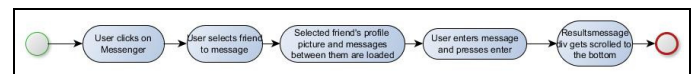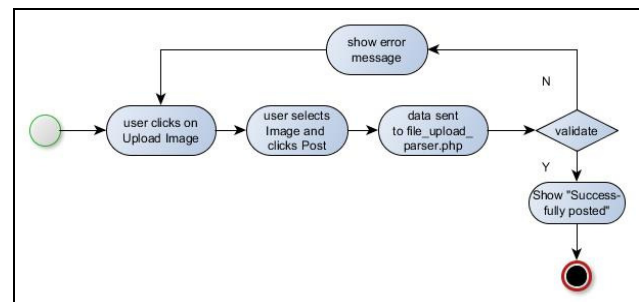Fig. 5.   Private Message a User through Messenger [Activity Diagram]

Fig. 6.   Post Image [Activity Diagram]
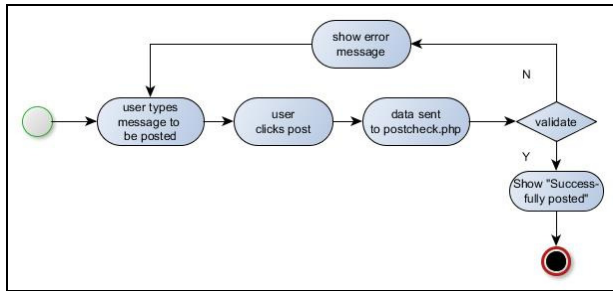
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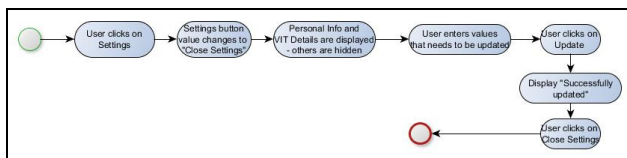Fig. 7.   Post Message [Activity Diagram]

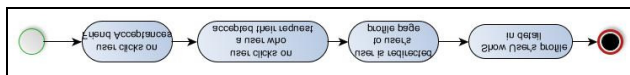Fig. 8.   Update settings/info [Activity Diagram]

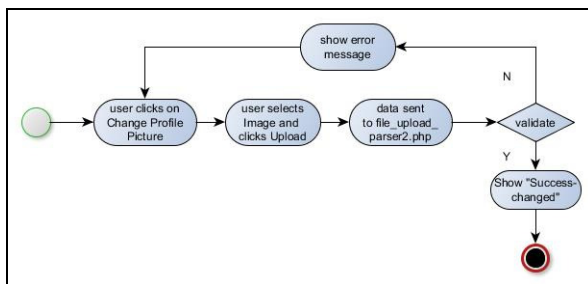Fig. 9.   Check Friend Acceptances [Activity Diagram]

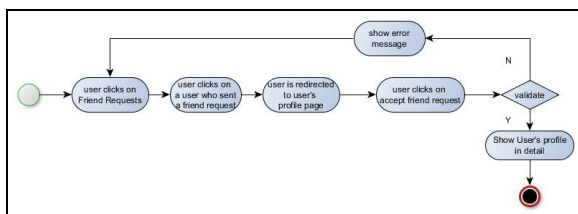Fig. 10. Change Profile Picture [Activity Diagram]

Fig. 11. Accept/Check Friend Requests [Activity Diagram]

3.4 Implementation

The implementation will be done with the use of the following programming languages/libraries/frameworks:

1. HTML, CSS – to lay the groundwork for front-end.
2. jQuery – to enhance the user experience and interaction.
3. jQuery AJAX – to enable data transfer to the server work within the webpage
4. itself depending on the user's actions.
5. Javascript – for various user functionalities
6. PHP – used for back-end with major uses including the processing of data, transferring of data, retrieving data from the database among others.
7. SQL – codes for communicating with the database management system implemented in MySQL.
8. Bootstrap – to make the system design compatible for multiple platforms such as mobile and desktop while maintaining the same functionality.

The following software packages are needed to develop the web application:

1. Notepad++ (Code Editor)
2. Google Chrome Internet Browser (or any other)
3. Microsoft Word
4. 000webhost.com (website for domain registration and hosting)
5. PhpMyAdmin for maintaining the database
6. FTP Software such as FileZilla for editing website files (can also be done through the file manager provided by the host - 000webhost)
7. Microsoft Windows 10

Also, the Bootstrap's gridsystem can be effectively utilized to realize a responsive design. To implement dynamic web pages, Jquery AJAX will be used to send requests to the server asynchronously.
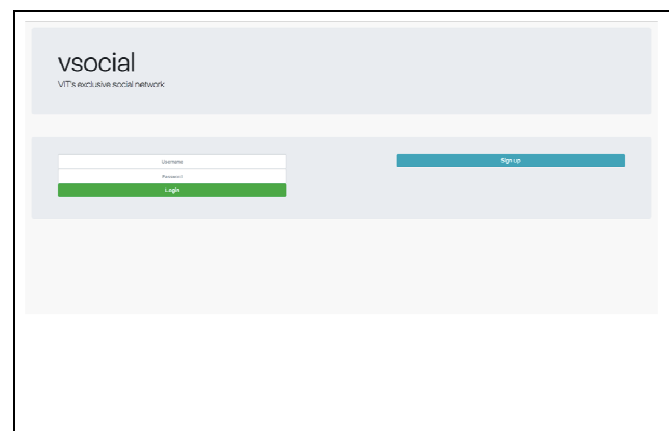
3.4 Results

Login/Signup Page [Root Directory]:

Fig. 12. Login/Signup Page in Desktop View

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The screenshot above shows the landing page once vsocial is loaded. It offers the user to either log in or sign up. Once the sign up button is clicked, the form gets loaded dynamically as shown in the next figure.
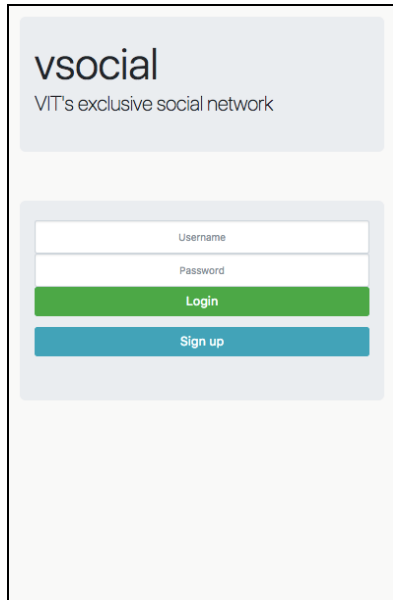

Fig. 13. Login/Signup Page in Mobile View

The same page is now shown as how it will be when viewed on a mobile device. In this case, the sign up button moves right below the login form, unlike how it would be shown on the right side when viewed on a desktop.
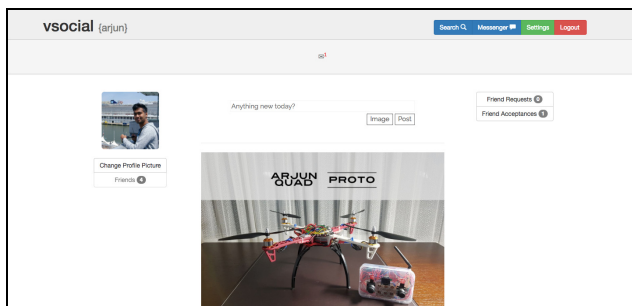
Home Page [Home Directory]:

Fig. 14. Homepage after user logs in desktop view

Once the user logs in, the user lands to this page. It consists of a navigation bar at the top, the vsocial posts from the user's friends in the middle and other subtle features. The navigation bar is where users can move between the search tool, messenger, and even modify their settings instantly. The user can post a text or an image on the same page dynamically with the post handler in the middle. Friend Requests and Acceptances are shown on

the right side with the number indicating its notification value. The user also has the ability to modify their profile picture or add a new one by clicking on the 'Change Profile Picture' button on the left-hand side.
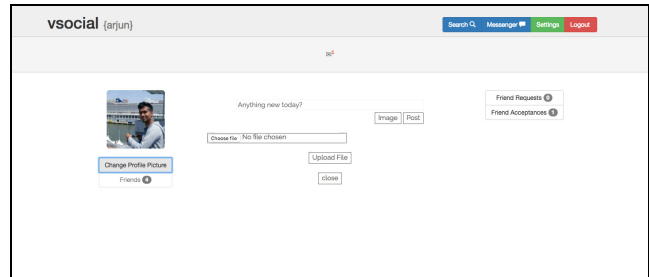

Fig. 15. Image Upload Container

An upload image container is loaded to the screen once the change profile picture is clicked on, to let the user change their profile picture.
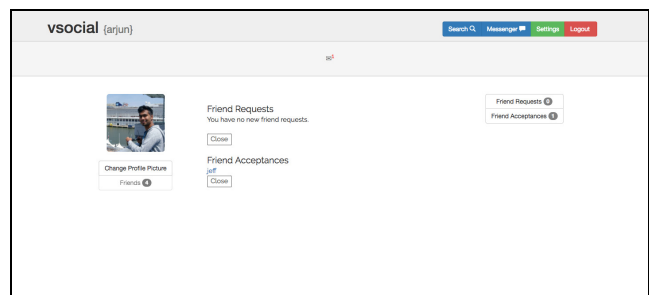

Fig. 16. Notification of Friend Requests and Acceptances

Once the user clicks on Friend Requests/Acceptances, the list of people that requested or accepted to be friends shows up while simultaneously fading away all the other clutter. Once 'Close' is pressed, the posts bar shows up while the list fades away.
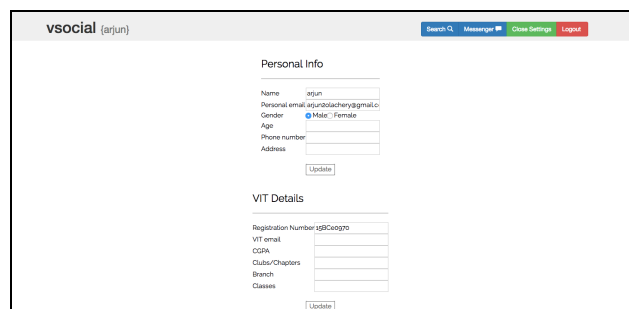

Fig. 17. Settings Page

The settings page shows all the information that a user can update such as their Personal Info and/or VIT Details, if required.

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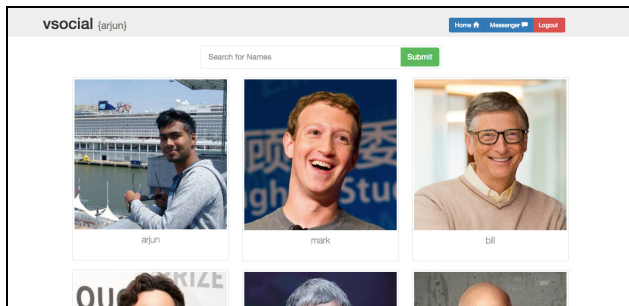www.IJCSN.org

Search Page [Search Directory]:

Fig. 18. Search Page

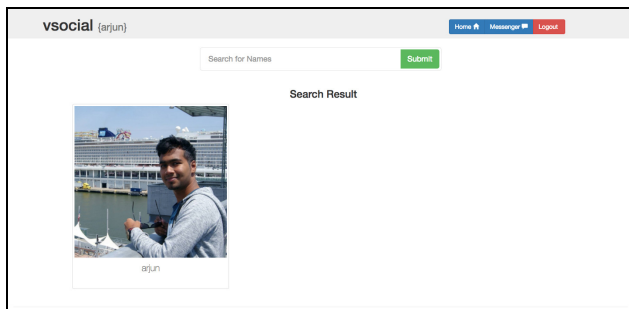The search page lists out all the users of vsocial whether they are friends or not.

Fig. 19. Search Result

The search page allows the user to type a username and search for a user with results similar to what's shown.
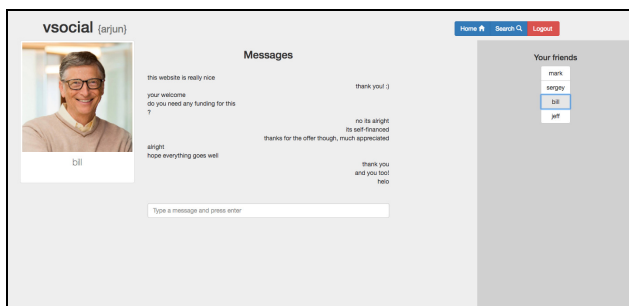
Messenger Page [Messenger Directory]:

Fig. 20. A Chat in Messenger

In this example, if the user wants to talk to bill, the user clicks on Bill and can now start privately messaging him.

User Page [User Directory]:

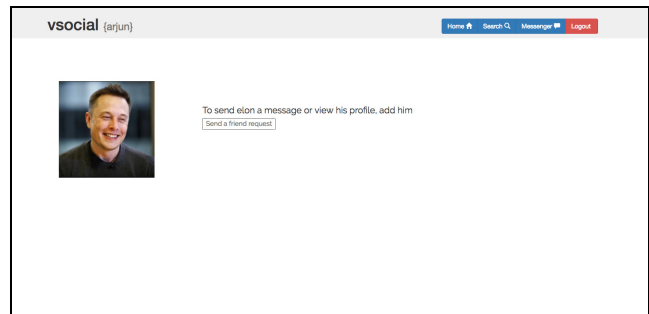Fig. 21. Viewing a User's Profile

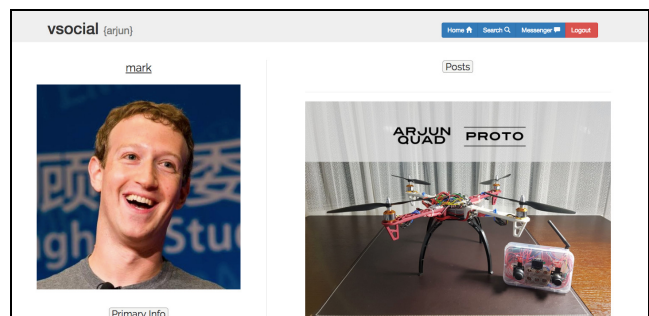After clicking on 'Send Friend Request', the user now has the option to Cancel it if needed.

Fig. 22. Viewing a Friend's Profile

A friend's profile will display their posts and their data

3.5 Evaluation

The surveys that were conducted after launching vsocial to our college users, we found the following results:
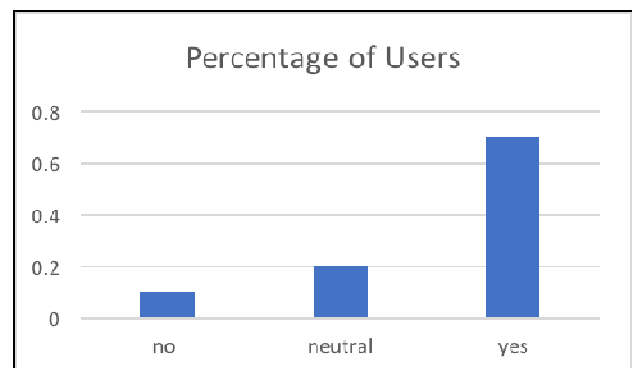

Fig. 23. Survey Results for User Satisfaction.

According to the above image, around 70% percent were satisfied, 20% were neutral, and 10% percent were not satisfied to the Vsocial social networking service. Overall, it is a good sign that the social network has created a lot of satisfied users and it functions as per the user's needs that were mentioned initially.

4. Comparative Study

Many studies have been conducted to see the harmful effects of the current social networking sites at present but few have so far mentioned about creating a new social networking app that would specifically target students.

In a paper that mentions about students using Facebook groups as a way to communicate notes that it is a very limited form of interaction as there are many groups on facebook and it is not the first group a user will see when he/she logs in [11]. Before he goes into the group, he might scroll through the public news feed first for a while which may take up his precious productivity period that could have been used for discussing with his peers.

Comparatively, Vsocial would make a much better tool than Facebook Groups for students willing to discuss mostly because it is clutter-free and the student can get right down to discussions without giving much thought in a hassle-free manner.

In another paper that discusses the dissimilarities between teachers and students regarding how they use social networking services, it describes that teachers are more likely to view email than use a SNS like Facebook [12]. On the other hand, students would use students would use Facebook more than check email. With Vsocial, the gap would be bridged because the teachers can also interact with their students on Vsocial effortlessly.

SNSs are sometimes also used as a marketing tool in order to spread around information as quickly as possible [13]. Since there is a ton of marketing being implemented in general social networking sites, Vsocial will not be like that. The only kind of marketing that will go on in Vsocial will be that of activities or events that are happening in the college/school and needs to be conveyed to the students effectively.

Another social networking service called SafeBook uses a decentralized architecture and uses a mechanism of trust networks in real life to ensure the privacy of the user [14]. Although this is a nice approach to solving the privacy issue, Vsocial has a better approach and that is by ensuring the user actually knows the other user he/she is adding before accepting requests or giving out requests.

5. Conclusion

The social networking service that can be used efficiently for the education sector has been presented. Various features that are common across multiple social networks as well as the students' needs have been implemented. It was initially done by getting out ideas through surveys and finding out ideal features for a social network that would be of use for students and teachers alike. Then the social network was implemented using various web programming frameworks and languages in order to turn the idea into fruition. After it was made, it was evaluated according to the specifications which were all satisfied, and also complies with the users' needs.

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