INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH IN ENGINEERING AND MANAGEMENT (IJSREM)
VOLUME: 08 ISSUE: 02 | FEBRUARY - 2024 SJIF RATING: 8.176 ISSN: 2582-3930

Social Media Web Application – REVAGRAM

Nikhil Polapragada
Computer Science and Information Technology
REVA UNIVERSITY
Bengaluru,India
nikhilp7320@gmail.com

Abstract— **Technology is a tool that helps us live mythically. In the modern era when "Everything you imagine can be made real" is the momentum, then bringing humans in conjunction cerebrally is not difficult, Social Networking is one such domain. It is inevitable to ignore the fact that nowadays social network plays an essential role in our daily lives. It makes our lives easier and efficient. It has become the rage of this age. In order to ensure that all the students of an educational institution have communal interaction in which they create, share or exchange information and ideas on virtual streams, we bring forth a social media application *REVAGRAM*.**
Social media web applications have transformed the way we communicate and interact with each other, and their influence is only set to continue to grow in the years ahead. As these platforms continue to evolve and develop, it will be important for social media companies, governments, and individuals to work together to address the challenges and opportunities presented by this rapidly changing digital landscape.

Keywords—social media for college, online learning, social media for students

I. INTRODUCTION

Social media web applications have transformed the way people interact with each other online. They have revolutionized the way people communicate, share information, and connect with each other. In recent years, these platforms have become an integral part of our daily lives, providing us with a way to stay connected with friends and family, and even meet new people.

Social media platforms offer a range of features, including messaging, video and photo sharing, live streaming, and news feeds, which allow users to stay up to date on the latest trends and news in real-time. They are designed to be user friendly, accessible, and interactive, making it easy for users to create and share content, join groups, and engage with others.
Social media platforms have also become powerful tools for businesses, providing them with a way to reach and engage with their target audience in a more personalized and direct way. Many businesses use social media to promote their products and services, connect with customers, and build brand awareness.
In recent years, social media web applications have seen explosive growth in usage, with billions of people around the world using platforms like Facebook, Instagram, Twitter, and LinkedIn.

Social media platforms have also become important tools for political campaigns, with politicians and political organizations using these platforms to engage with voters and spread their message. In order to ensure that all the students of an educational institution have communal interaction in which they create, share or exchange information and ideas on virtual streams, we bring forth a social media application **REVAGRAM**

II. DESIGN MODEL

Our application is a three-tier web architecture. As the name suggests, there are three layers. One is the client side, the other is the application and the third is the database tier.

A three-tier web architecture is a commonly used approach for building web applications. It separates the application into three logical tiers or layers: the presentation tier, the application or business logic tier, and the data storage or persistence tier. Each tier has a specific role and interacts with the other tiers to deliver a complete web application. Here's an example of a 300-line breakdown of a three-tier web architecture:

A. Presentation Tier (Client-Side):

- HTML, CSS, and JavaScript files for the user interface.
- Folder structure for organizing client-side code (e.g., images, stylesheets, scripts).
- User interface components, such as forms, buttons, and navigation menus.
- JavaScript frameworks or libraries (e.g., React, Angular, Vue.js) for dynamic.
- Rendering.
- AJAX or fetch requests to communicate with the application tier.

B. Application Tier (Server-Side):

- Web server configuration files (e.g., Apache, Nginx) for routing requests.

- Routing logic to map incoming requests to appropriate controllers or handlers.
- Controllers or request handlers to process client requests.
- Validation and authentication mechanisms.
- Business logic components for implementing application-specific functionality.
- Service layer for interfacing with the data storage tier.
- Error handling and logging mechanisms.

C.Data Storage Tier:

- Database management system (DBMS) configuration files (e.g., MySQL, PostgreSQL).
- Database schema definition scripts.
- Tables, views, and indexes to store and organize data.
- SQL queries for data retrieval, insertion, modification, and deletion.
- Connection pooling or database connection management logic.
- Object-Relational Mapping (ORM) or data access layer to interact with the database.
- Data migration scripts for database schema updates.

o *Additional components and considerations:*

- Middleware components for handling cross-cutting concerns (e.g., caching, logging, security).
- APIs or web services for integrating with external systems.
- Unit tests, integration tests, and end-to-end tests for verifying application functionality.
- Configuration files for different environments (e.g., development, staging, production).
- Deployment scripts or tools for deploying the application to production servers
- Load balancers and scaling mechanisms for handling high traffic or increasing demand.
- Security measures, such as SSL certificates and encryption protocols, to protect data transmission.
- Monitoring and performance tracking tools to ensure the application's health and optimize performance.

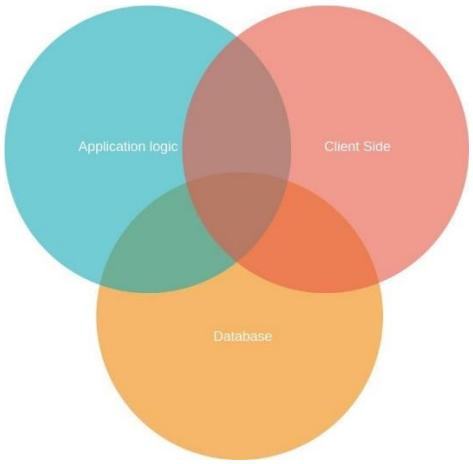

FIG 1: THREE-TIER WEB APPLICATION

III. METHODOLOGY

The API first approach is what we went with. With this keeping in mind, we built our application mostly by creating routes, api routes, which will be made available to the frontend so they can consume these endpoints. No matter what the frontend is, we can easily connect the backend to any software of our choice. So, our whole application was built around these api's. This in a nutshell is what API first approach is.

The process of creation of this project was done in steps, carefully looking at each aspect of the program and working with one functionality before moving on to another functionality of the project. This approach takes less time and is more yielding in results in my humble opinion. We created a prototype to be able to understand as to what we will be creating. This approach is important in terms of what the stakeholders will have in front of their hands as the project finishes. And leaves room for improvement if the stakeholders don't like the product. We used the sketching method to build the client side of the project for the stakeholders to look at as to what they will be expecting in terms of how the project looks when it's finished. This approach was beneficial.

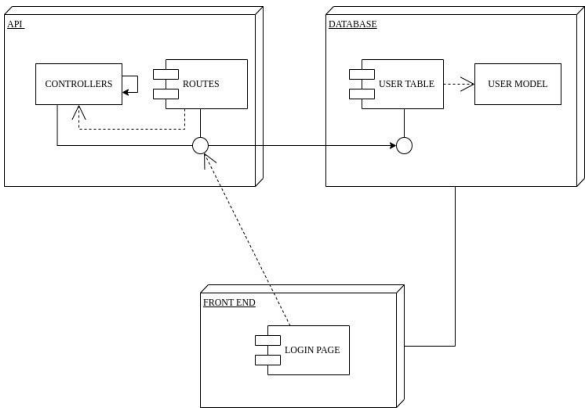

FIG 2: API FIRST APPROACH

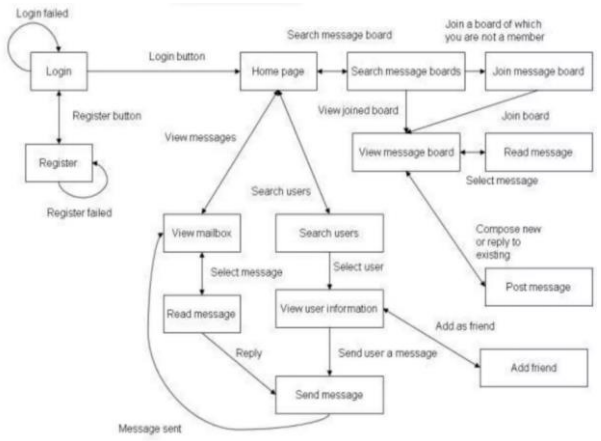

FIG 3: OVERVIEW OF USECASE DIAGRAMS

IV. OUTPUT

The goal of this project is to develop a social media website specifically tailored for college students. The website will provide a platform for students to connect, communicate, and share information within their college community. It will facilitate interaction, foster collaboration, and enhance the overall college experience.

Features and Functionality:

A. User Registration and Authentication:
1. Students can create accounts and authenticate themselves to access the website.
2. User authentication mechanisms such as email verification and password hashing will be implemented for security.

B. User Profiles and Networking:
1. Each user will have a profile where they can provide personal information, interests, and a profile picture.
2. Students can search and connect with other students within their college.
3. Users can send and accept friend requests, follow other users, and manage their connections.

C. News Feed and Posts:
1. Users can post updates, thoughts, photos, and share links on their news feed.
2. The news feed will display the posts of friends and followed users in a chronological order.
3. Users can like, comment on, and share posts.

D. Groups and Events:
1. Students can create and join groups based on their interests, clubs, or courses.
2. Group members can interact, share resources, and organize events within the group.
3. The website will have a calendar feature to manage and display college events and activities.

E. Private Messaging:
1. Users can send private messages to individuals or groups for direct communication.
2. Messages can include text, images, and other media files.

F. Notifications:
1. Users will receive notifications for friend requests, messages, post interactions, and important updates.
2. The website will provide a notification centre to manage and view notifications.

G. Privacy and Security:
1. Users will have control over their privacy settings, allowing them to customize the visibility of their profile, posts, and personal information.
2. Appropriate security measures will be implemented to protect user data and prevent unauthorized access.

H. Responsive Design:
1. The website will be developed with a responsive design approach, ensuring optimal user experience across different devices and screen sizes.

I. Technology Stack:
1. Front-end: HTML, CSS, JavaScript, React.js (or other preferred framework/library)
2. Back end: Node.js, Express.js
3. Database: MongoDB (or other preferred database management system)
4. Authentication: JWT (JSON Web Tokens)

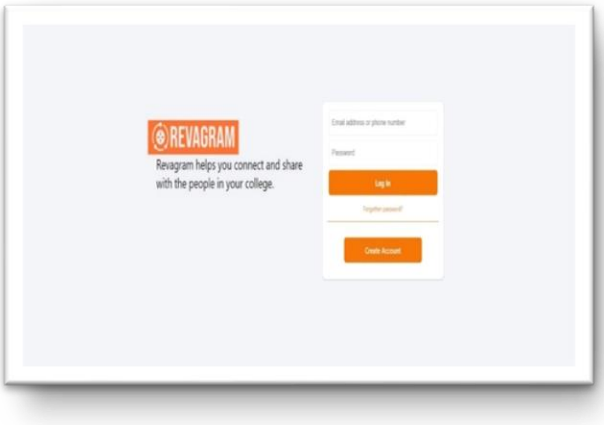

FIG 4: LOGIN PAGE

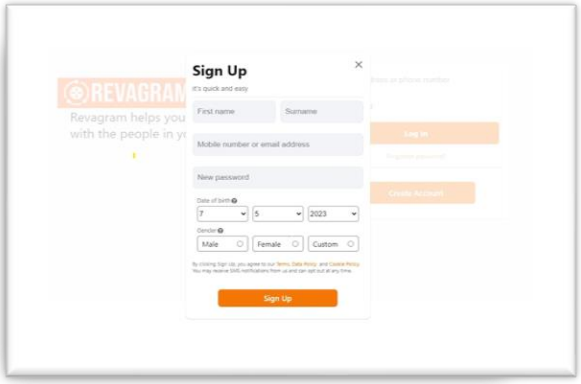

FIG 5: SIGN UP PAGE

V. LITERATURE SURVEY

The use of social media has become ubiquitous in today's society, with college students being one of the most active user groups. Recognizing the potential of social media platforms in enhancing the college experience, researchers and educators have explored various aspects of building social media specifically designed for college students. This literature survey aims to provide an overview of existing research and insights on building social media platforms tailored for college students, focusing on their benefits, functionalities, and impact on student engagement and learning outcomes.

1. "Leveraging Social Media in Higher Education: A Review of Existing Literature" by Junco, R. (2015) This study provides a comprehensive review of the literature on the use of social media in higher education. It explores the potential benefits of social media platforms for college students, such as improving student engagement, facilitating collaboration, and enhancing communication between students and instructors.

2. "Designing Social Media Platforms for College Learning: A Review of Literature" by Koohang, A., Harman, K., & Britland, M. (2013) The authors review existing literature on designing social media platforms for college learning. They discuss the key functionalities required in such platforms, including features like discussion forums, resource sharing, real-time communication, and collaborative spaces. The study emphasizes the importance of designing platforms that align with the specific needs and learning objectives of college students.

3. "Exploring the Impact of Social Media on Student Engagement and Academic Performance" by Junco, R., Heiberger, G., & Loken, E. (2011) This research examines the impact of social media usage on student engagement and academic performance. The study found that students who actively engage with social media platforms designed for educational purposes tend to have higher levels of engagement and improved academic performance compared to non-users. The authors highlight the potential of social media in promoting student success.

4. "Building an Educational Social Media Platform: Design Considerations and Lessons Learned" by Joosten, T., & Cusatis, R. (2017) This study explores the design considerations and lessons learned from building an educational social media platform for college students. It discusses the importance of user-centered design, privacy and security measures, integration with existing learning management systems, and the need for ongoing support and training to ensure successful adoption by students and faculty.

5. "The Impact of Social Media on College Students' Sense of Belonging" by Hurt, H. T., Moss, G. S., Bradley, C. L., Larson, L. R., Lovelace, M. D., & Prevost, L. B. (2012) This research investigates the impact of social media usage on college students' sense of belonging. The study suggests that social media platforms designed for college communities can foster a sense of belonging, connecting students to their peers and the broader campus community. It emphasizes the role of social media in creating a supportive and inclusive environment.

The literature survey highlights the growing body of research focusing on building social media platforms tailored for college students. The findings suggest that well- designed social media platforms can positively impact student engagement, communication, collaboration, and sense of belonging. However, careful consideration must be given to privacy, security, and the alignment of platform functionalities with educational goals. Future research should continue exploring the potential of social media in supporting college students' learning outcomes and addressing the evolving needs of this dynamic user group.

VI. CHALLENGES

A. Accessibility:

Problem:

- The social media web application is built on an understanding that it would be accessible to the students at Reva University and in particular to the school of CIT.
- How do we limit the application to just the students of CIT?
- How do we ensure that every student at the school of CIT has access to the social media web application?

Our Solution:

- The username for logging into the social media web application would be the student registration number and this way the application is restricted to just the students of CIT
- The SRNs of all students are stored in a backend database and upon login request is first checked and then allowed to access the platform.

B. Efficiency:

Problem:

- We design an app for a special purpose and with a specific goal, then it has to be made sure that our primary concern is the efficiency of the application. Here the case is about users, we need to ensure that the basic functions for which the app is developed are working properly.
- If a user request takes a lot of time to process and this persists for longer durations, then the users tend to lose interest even from their favourite activities. This app should be such that it has a simple streamlined approach that is efficient enough to serve the user in the best way.

Our Solution:

We use powerful user interfaces with the **best UI/UX design skills**, but sometimes you need to focus more on the core and keep design subtle. Functioning should be efficient and smooth, so that the users don't face any complications during interactions.
Our approach is simple,

- Figure out the main functionalities this app will serve
- Prioritize the functions
- Design the functions in a way that less effort is required to perform them.
- Design icons, buttons, shapes, etc. in bold and noticeable way.
-

C. Security:

Two- Factor Authentication

Two-factor authentication (2FA) is an additional layer of security that requires users to provide two forms of authentication before accessing their accounts. The two factors can be something the user knows (like a password or PIN) and something the user has (like a mobile device or security token). 2FA is designed to protect against a variety of security threats, including phishing, credential stuffing, and password guessing. 2FA is becoming increasingly popular as a security measure due to the growing number of cyberattacks and data breaches. It is an effective way to protect sensitive data and ensure the security of user accounts. While 2FA is not fool proof, it can significantly reduce the risk of unauthorized access and improve the overall security of user accounts.
However, it is important for users to also take additional measures to protect their accounts, such as choosing strong passwords, keeping their devices and software up to date, and being vigilant against phishing attacks. Organizations should also implement other security measures, such as monitoring, access controls, and encryption, to ensure the security of their systems and data.

Encryption

Encryption is the process of converting plain text data into a coded form that can only be read by authorized parties. It is used to protect sensitive data from unauthorized access, interception, and theft. Encryption works by transforming the original data into an unreadable format using a mathematical algorithm and a secret key. The encrypted data can only be decrypted and read by someone who has the corresponding key. Encryption is an essential tool for ensuring the security and privacy of digital data. However, it is not fool proof, and attackers can still find ways to circumvent encryption. To ensure maximum security, it is important to use strong encryption algorithms and keys, implement regular security updates, and follow best practices for secure data storage and transmission.

VII. CONCLUSION

In today's interconnected world, social media has become an integral part of our lives, influencing the way we communicate, share information, and build connections. As technology continues to advance, the development of social media applications has become a significant area of focus for businesses and developers. This article explored the key aspects and considerations involved in social media application development, highlighting its impact, challenges, and potential opportunities.

Social media application development offers immense potential for businesses to engage with their target audience, build brand awareness, and foster customer loyalty. By creating a platform where users can connect, share content, and interact with each other, businesses can tap into a vast pool of opportunities for marketing, customer insights, and community building. However, developing a successful social media application requires careful planning, attention to user experience, and continuous innovation.

One of the critical factors in social media application development is understanding the target audience and their needs. Different demographics and user segments have varying preferences, behaviors, and expectations when it comes to social media platforms. Conducting thorough market research and user analysis is crucial to identify the features, functionalities, and user experience that will resonate with the intended user base. This understanding will shape the overall design, user interface, and feature set of the application.

User experience (UX) design plays a pivotal role in the success of a social media application. A well-designed and intuitive interface, coupled with seamless navigation and engaging interactions, can significantly enhance user satisfaction, and encourage active participation. Implementing features such as personalization, real-time updates, notifications, and multimedia content integration can further enrich the user experience and increase user engagement.

Another significant consideration in social media application development is data security and privacy. With the increasing concern over data breaches and privacy violations, users are

more cautious about sharing their personal information. Developers must implement robust security measures, including encryption, secure authentication, and data protection mechanisms, to ensure user trust and compliance with data protection regulations.

Developing a social media application also involves leveraging technology trends and emerging innovations. Incorporating features such as artificial intelligence (AI), machine learning (ML), chatbots, and data analytics can provide valuable insights, personalized recommendations, and automated interactions, enhancing the overall user experience. Additionally, integrating with third-party platforms, such as social media APIs, can extend the reach and functionality of the application.

Building and maintaining a social media application requires a scalable and reliable infrastructure. With millions of users generating and accessing content simultaneously, the application must handle high traffic loads, ensure minimal downtime, and offer fast response times. Employing cloud-based solutions, scalable server architectures, and content delivery networks (CDNs) can help optimize performance and ensure a seamless user experience across different devices and locations. Monetization strategies are another critical aspect of social media application development. While some platforms opt for a freemium model with premium features or subscriptions, others generate revenue through targeted advertising, influencer collaborations, or sponsored content. Selecting the right monetization strategy depends on factors such as the target audience, competition, and the application's unique value proposition.

Finally, the success of a social media application relies heavily on continuous improvement and innovation. Listening to user feedback, monitoring analytics, and staying updated with the latest industry trends are essential for identifying opportunities for enhancement and delivering a relevant and engaging user experience. Regular updates, bug fixes, and feature additions are necessary to keep the application competitive and retain user interest over time.

In conclusion, social media application development presents significant opportunities for businesses to connect with their target audience, build brand loyalty, and drive growth. However, it requires careful planning, user-centric design, robust security measures, scalable infrastructure, and continuous innovation. By leveraging technology trends, understanding user needs, and providing a seamless and engaging user experience, social media applications can become powerful platforms for communication.

ACKNOWLEDGMENT

The author is grateful to REVA University, School Computing and Information Technology, Bangalore, for providing the facility to carry out advanced research work on the premises of the university.

REFERENCES

[1] Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. Journal of Computer-Mediated Communication, 12(4), 1143-1168.
[2] Boyd, D. M., & Ellison, N. B. (2008). Social network sites: Definition, history, and scholarship. Journal of Computer-Mediated Communication, 13(1), 210-230.
[3] Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. Business Horizons, 53(1), 59-68.
[4] Chaffey, D., & Ellis-Chadwick, F. (2019). Digital marketing: Strategy, implementation, and practice. Pearson UK.
[5] Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. Business Horizons, 54(3), 241-251.
[6] Kaplan, A. M., & Haenlein, M. (2011). The early bird catches the news: Nine things you should know about micro-blogging. Business Horizons, 54(2), 105-113.
[7] Liang, B., & Turban, E. (2011). Introduction to the special issue social commerce: A research framework for social commerce. International Journal of Electronic Commerce, 16(2), 5-14.
[8] Chen, W., & Xie, X. (2008). Mining interesting locations and travel sequences from GPS trajectories. In Proceedings of the 18th international conference on World wide web (pp. 791-800).
[9] Java, A., Song, X., Finin, T., & Tseng, B. (2007). Why we Twitter: Understanding microblogging usage and communities. In Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis (pp. 56-65).
[10] Zhang, Y., & Dimitroff, A. (2011). An investigation of user perceptions of information credibility of Twitter. Information Research, 16(2), 1-17.