



Idea Lab – Social Networking Site for Collaborative Learning

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ABSTRACT

The main objective of this Project presents a new social media app designed to connect professionals, students, and enthusiasts with like-minded individuals and provide a dedicated space for sharing and collaborating on ideas, projects, and news related to their field of interest. The app utilizes Google authentication to ensure secure user registration and login. Additionally, the app addresses the current limitations of existing social media platforms, which are primarily focused on personal communication and entertainment, by providing a safe, secure, and private space for users to share and collaborate on professional ideas, projects, and news, and connect with other users in their field of interest. The community guidelines and user reporting also help to keep the platform safe and appropriate for all users. This new social media app has the potential to provide significant benefits for professionals, students, and enthusiasts in terms of networking, professional growth, development, and access to relevant information and experts in their field of interest.

Keywords: Social Networking, Technology, Collaborative Learning, Students, Technology Enthusiasts

1. Introduction

In this digital age, technology plays a part in every aspect of our life, transforming the way we learn, live, and work. Online education and e-learning have become increasingly popular, enabling students to access knowledge and resources from anywhere in the world. However, they lack the interpersonal interaction of face-to-face learning[1]. This is where Idea Lab, a social networking app, comes in. It connects individuals who share interests in technology, education, and professional development and provides a platform to discuss concepts, tasks, and news while interacting with like-minded users [2].

2. Literature Review

The following sources provide a fluid explanation of the design of Idea Lab and have been drawn from a survey of a few research publications on social networking and the state of the educational system today. Rutherford [1] supports preservice student involvement through online social media. online learning and teaching journal, Merlot (2010). Today's students are heavily influenced by the growth of popular social media platforms, which may be accessed through laptops and mobile devices before, during, and after class. According to the study's findings, there is a link between students' use of various social media platforms and how they view their connections with teachers and other students, as well as how they describe the learning environment.

J. Voorn, P. A. Kommers, and others [2] Many researchers have been interested in social media for the past ten years. As suggested by other studies, one of the elements that has the potential to be crucial in a dynamic learning environment is the media. Examining students' motivations for using social media for learning is the main goal of this study. The study also revealed that respondents frequently utilise social media, yet the findings indicate that students are hesitant to use social media for educational communication.

Ibrahim M. Al-Jabri and Mustafa I. M. Eid [3] This study demonstrates that the use of SNS enhances learning and knowledge exchange. The SNS features that students utilise the most to engage in peer-to-peer discussions and share ideas are chat and online forums. This study has important ramifications for both instructors and students. SNS platforms can be used by educators to foster collaborative learning, peer-to-peer dialogues, and knowledge co-creation.

Hays Ajjan, Paul Hong, and Yingxia Cao [4] This study analyses how social media use affects student learning in college courses and offers a research model of the causes and effects of social media use. Partial least squares (PLS) analysis was used to analyse the quantitative data that the study obtained from 168 professors who use social media in their classrooms. The study discovered that perceived utility, outside pressure, and task-technology compatibility have favourable effects on social media use in college instruction. According to the study, the less likely faculty members are to routinely employ technology to support in-class instruction, the higher the perceived risk of doing so is.

Chris [5]. Students in higher education can use social media to accelerate their learning. The study you mentioned looked into using Twitter as a teaching tool and came up with a number of important conclusions. The first discovery was a link between student participation in university-related activities, like planning their social lives and sharing information, and the amount of time spent on Twitter. The second conclusion was that interpersonal interactions between students and their tutor were not associated with course-related tweeting. This indicates that social media can be good for student collaboration and communication. The third discovery was that using Twitter had no effect on going to class. This implies that even though social media can be a helpful learning tool.

3. Design and Development

The detailed study has been carried out the design for various components of the web application. The social media app was built using a combination of ReactJS, Redux, and Firebase. ReactJS was chosen as the primary front-end framework for its component-based architecture and ease of use. The app's state management was handled through Redux, providing a centralized and predictable way to manage and update the app's state. Firebase was used for the back-end, providing a secure and scalable cloud-based infrastructure for the app's database, authentication, and hosting needs. The Realtime Database feature of Firebase allowed for real-time data synchronization, ensuring that the app's data was always up-to-date and responsive.

Algorithms:

The following algorithms are used to restrict the user to share only the allowed content like project ideas, news, technology related content.

1. Text Classification using BERT
2. Image Classification
3. Text Toxicity Classifier

1. Text Classification using BERT

Text classification using BERT can be a powerful tool for allowing only appropriate content to be shared on a social media app. BERT, or Bidirectional Encoder Representations from Transformers, is a pre-trained language model that is capable of understanding the meaning and context of text.

To use BERT for text classification, the social media app could implement a system that analyzes the text of a user's post or comment and assigns it a probability score for being appropriate or inappropriate based on the content. The app could use a pre-trained BERT model that has been fine-tuned for detecting inappropriate content, such as hate speech or harassment.

2. Image Classification

For effective on-device image categorization and related applications, Mobile Net V3 is a series of neural network architectures.

Mobile Net V3 adjusts the accuracy vs. latency tradeoff by multiplying the depth (number of features) in the convolutional layers. Additionally, Mobile Net V3 is available in two distinct sizes, small and large, allowing the network to be configured for use cases requiring little or a lot of resources. This TF Hub model employs mobilenet_v3's TF-Slim implementation as a sizable network with a 0.75 depth multiplier.

3. Text Toxicity Classifier

The toxicity model determines whether text contains toxic content, such as obscene or sexually explicit language, threats, insults, and obscenities. The dataset for polite comments was used to train the model: https://figshare.com/articles/data_json/7376747 which has two million comments flagged as harmful. The Universal Sentence Encoder serves as the foundation for the model.

4. Module Description

There are two types of modules are developed in our project:

- **Admin:** Admin is the person who can maintain Database and also managing the user posts, collaboration, my network, chat managements.
- **User:** User can sign up with login with their Gmail accounts.

Some of the sub modules in our user web application are:

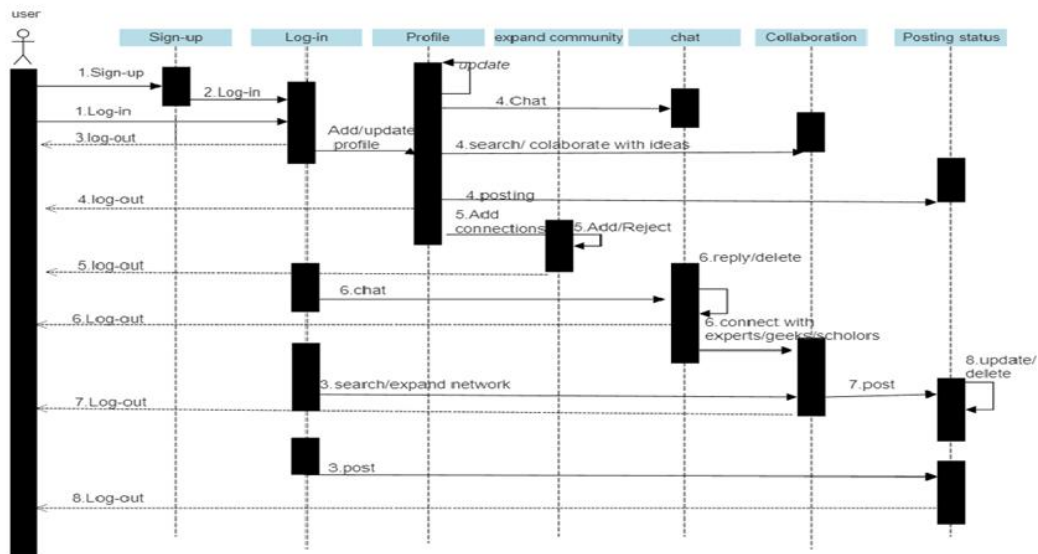
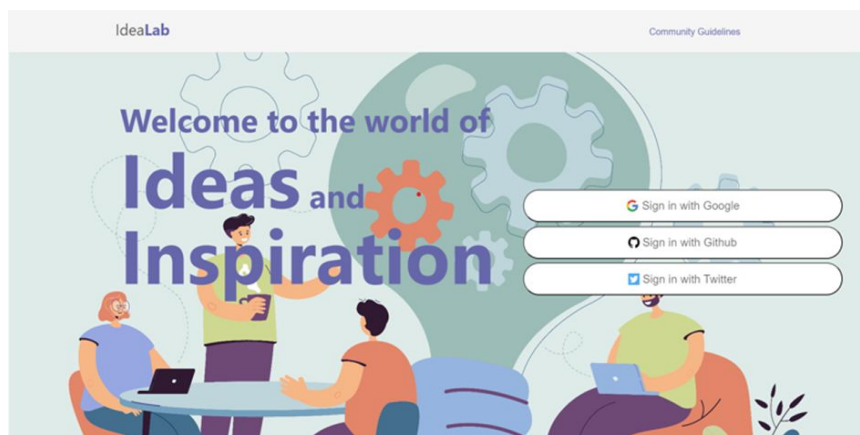


Fig 1: Sequence Diagram of Idea Lab

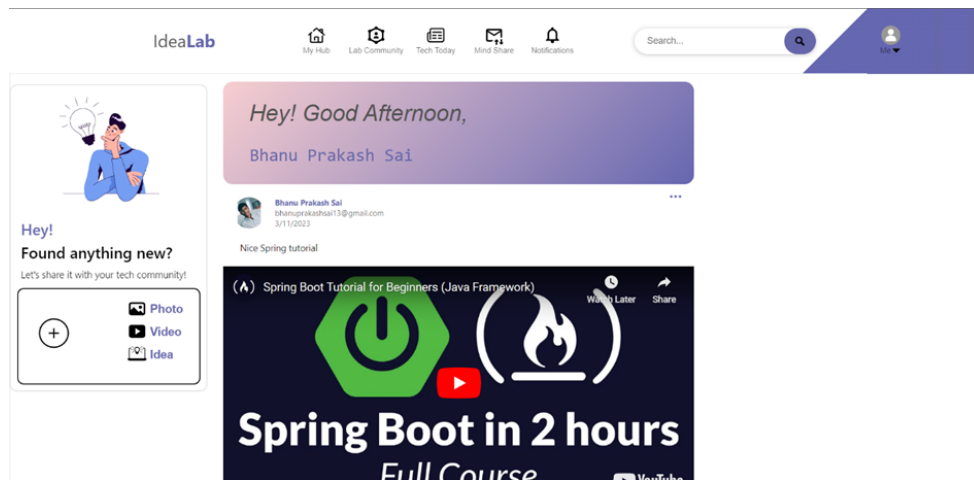
- **Sign Up:** Users can sign up with their Gmail account. This is the initial step to connect with Idea Lab.
- **Login:** Users can login directly with their Gmail account. If user successfully logged into their account, users are redirected to the home page.
- **Profile:** In profile. User can View, Add, Edit, Delete their information
- **Post:** Users can post ideas, news, images, videos. They may like, comment, unlike others post also.
- **Expand Community:** Expanding community enable users to connect, collaborate, and share ideas and resources with other users who share their interests and goals.
- **Chat:** Users can directly communicate with other users, experts, professionals.
- **Collaboration:** Collaboration enables users to work together on shared interests and goals, build professional relationships, and enhance their skills and knowledge

5. User Interface

The user interface of the social media app was designed with a focus on user experience and ease of use. The app's interface is modern and intuitive, with a clean and simple layout that allows users to easily navigate and access its features. It provides simple, responsive, call-to-action functionality, and real-time updating interface. Figure 2(a) and 2(b) shows the interface of the application



2(a). User Interface for Sign-in



2(b). User Interface for Home Page

6. Conclusion

This new social media app is an innovative and much-needed addition to the existing social media landscape. By providing a dedicated space for professionals, students, and enthusiasts to connect and collaborate on professional ideas and projects, the app can help users to network, grow professionally, and gain access to valuable information and expertise in their field of interest. Overall, the new social media app is an exciting development that has the potential to transform how professionals, students, and enthusiasts connect and collaborate in the digital space.

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