

VICHAR A Multi-Feature Social Media Platform: Developing a Twitter Inspired App with Enhanced Functionality

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Abstract: *VICHAR introduces a new social media platform inspired by Twitter, providing resources powered by machine learning (ML) and artificial intelligence (AI). This article explores developing VICHAR using the MERN stack (MongoDB, Express.js, React.js, Node.js) and leveraging AWS cloud services. We introduced two techniques: media analysis using short-term memory (LSTM) networks and sentiment analysis using Python. VICHAR has also integrated the DALL-E 2 API for advanced users to create images based on instructions. The freemium model allows for social interaction, while premium features provide deep content and creative expression. VICHAR targets users who want to learn more and engage on social media*

Keywords: social media, Machine learning, Artificial Intelligence, MERN stack

I. INTRODUCTION

The social environment is a dynamic environment that is constantly changing. Today, users are looking for platforms that not only facilitate connection but also provide deep interaction with information [1]. This article introduces VICHAR, a new Twitter-inspired social media platform that leverages machine learning (ML) and artificial intelligence (AI) capabilities to improve user experience [2].

VICHAR is built using powerful and scalable MERN frameworks (MongoDB, Express.js, React.js, Node.js) to provide a stable foundation [3]. The platform seamlessly manages backup operations and provides operational efficiency using cloud services from AWS (Amazon Web Services)[4].

This paper delves into the design and development of VICHAR, focusing on its core functionalities and the unique AI-powered features that differentiate it from existing platforms. We explore the implementation of:

News Summarization: VICHAR integrates a Long Short-Term Memory (LSTM) network to generate concise summaries of lengthy news articles. This premium feature empowers users to stay informed efficiently.

Sentiment Analysis: Leveraging Python libraries, VICHAR analyzes the emotional tone of text data, providing valuable insights into public perception on trending topics or events. This premium feature empowers users to make informed decisions based on sentiment analysis.

Image Generation: VICHAR integrates the DALL-E 2 API, allowing premium users to generate creative visuals based on text prompts. This fosters a unique avenue for self-expression and visual communication

II. METHODOLOGY

2.1 THE MERN ARCHITECTURE

MERN stacking is a popular web development platform that combines four core technologies: MongoDB, Express.js, React.js, and Node.js. This approach provides a powerful and effective way to create a powerful and dynamic website. Details of the MERN stacking approach are:

MongoDB: MongoDB is a NoSQL database that stores data in a simple, data-oriented format. It supports scalable and efficient data storage, ideal for processing big data in web applications.

Express.js: Express.js is a web application framework that simplifies the development of server-side applications for Node.js. It provides a lightweight and flexible way to create RESTful APIs and execute HTTP requests, enabling seamless communication between the frontend and backend.

React.js: React.js is a JavaScript library for creating user interfaces. It supports the creation of reusable user interface components and provides a framework for creating interactive and responsive websites. React.js is useful for manipulating and rendering components, making applications faster and more efficient.

Node.js: Node.js is a server-side JavaScript runtime environment. It allows developers to create dynamic, efficient web applications by running JavaScript code on the server side. Node.js provides a non-blocking, event-driven architecture that can efficiently handle multiple connections.

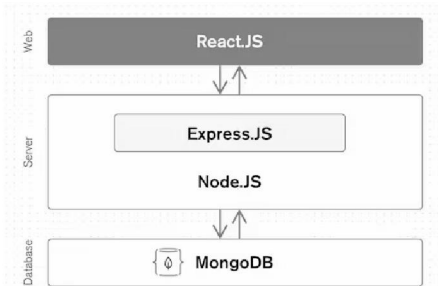


Fig 1 MERN Architecture

2.2. APPLICATION DESIGN

The social media platform we have created here is an efficient and effective website where users can post or view text or image material and communicate with other users. Other users can make content boxes or extensions to our app. By default, users can upload content available to users on other links and view content uploaded by users on other links. Users and other connected users can like or comment on each other's posts or updates. They may initiate and respond to communication requests from other users, accepting only as they see fit. The aim of this project is to reveal the working model of a real social media site.

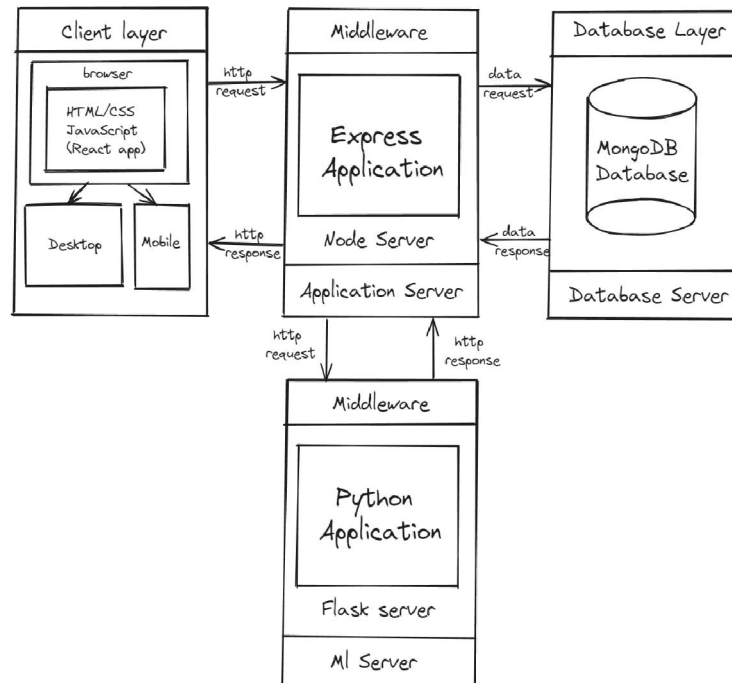


Fig 2 Application Design - System Architecture
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1) Models

The models defined in the Node.js server abstract the data in our MongoDB database. This is the reason. To create a blueprint of how we want the extra data to look and behave, we call abstraction on Mongoose schemas. A Mongoose schema is a document data structure that is mandated by the application layer. Models accept a schema and generate a document instance. They are more complicated constructors. A Mongoose model contains the Mongoose schema. A Mongoose model provides a database interface for adding, updating, deleting, and changing records, whereas a Mongoose schema specifies the document's structure, default values, validators, and other details.

User Model: The User model or User Schema encompasses all necessary data collected from users. It requires first and last names, a username assigned by the frontend, an email address, a password, the user's gender, birth year, month, and day, along with the creation date indicating when the user joined. Additionally, it stores optional data, such as Cloudinary URLs for a user's current profile and cover photos, as strings. Timestamps are included for a user's friends, followers, following, and saved postings.

Post Model: The Post Model primarily serves for posts and uploads within the application. Users can upload or modify their profile picture, cover photo, or post content, which can include plain text, images, text with images, or text overlaid on provided image backgrounds. Thus, the model stores the post type (e.g., profile picture, cover picture), along with any text (if applicable), images (as an array or null if none), a reference to the user, background (if any), and received comments, including the text, image (if any), commenter, and timestamp. Timestamps for each post are also recorded.

2) View

The entire user interface (UI) content of the web application is determined from the front view where we take all the information from controllers and packages and put it in the browser. It also generates a response for the browser and contains all sample and response data. We create a login page, home page, user page, password reset page and friend page in the social application. These pages; It provides a lot of personal content such as headers, footers, profile images, error pop-ups, pop-up mail windows, cards, login forms and many other features that help us process requests for receiving, sending, publishing and other content during editing. profile/cover photo, upload photo, create post, add/remove/search friends, access their profile, request/cancel/accept/cancel requests, etc. reducers and routing that control the flow to and from the backend, icons, styles, and all other design elements.

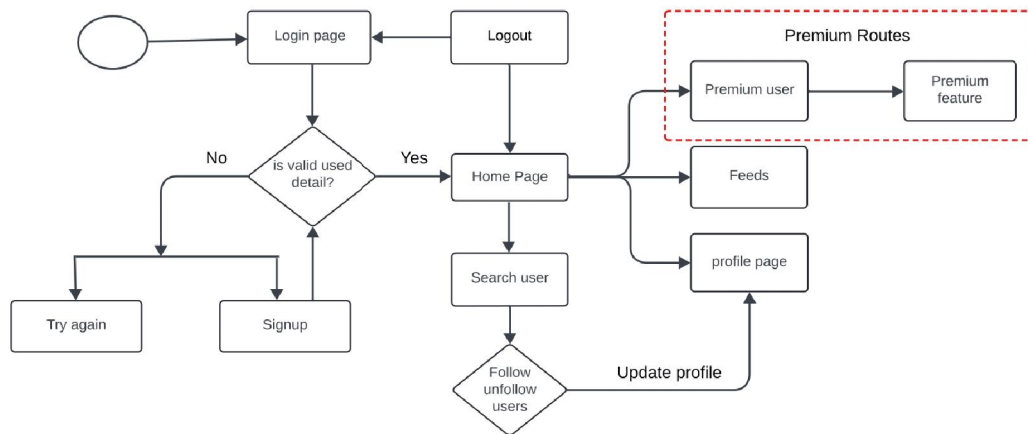


Fig 3 Application Design - User Navigation DFD

3) Controllers

All events arising from the view are managed by the Administrator. After receiving the method, the object receives the JSON response and passes it to its child object. The controller is responsible for custom packaging screens, page caching, server-side rendering, and prefetching. After completing the request, it responds with status and messages. For example, when a user clicks on a link, we try to generate a code to activate their account. We get the user ID from the

requested number and compare it with our database to see if it is a valid user. JWT (Json Web Token) is used to authorize access to methods, services and resources. When uploading images or media, the environment defines the format and file size upon receiving the request, and only if the conditions are met, the controller processes the request. Other features include an email function to email event codes to users.

2.3 OVERVIEW

The development of VICHAR is the focus of quality and control through a clear software development life cycle (SDLC) [5]. This section introduces the main applications:

Modular design: VICHAR's code base based on modular design. Core social media functions are separated from AI, such as news summarization and sentiment analysis. This modularity simplifies maintenance, facilitates future development and allows expansion of different functions.

Continuous integration and deployment (CI/CD): CI/CD pipelines automate code change, testing, and deployment processes. This ensures that new features and bug fixes are fixed quickly. The AWS cloud has the ability to manage backend operations, enabling integration with CI/CD pipelines [6].

III. LITERATURE REVIEW

There are many previous studies on the development and use of social applications developed using the MERN stack (MongoDB, Express.js, React and Node.js). Here are some examples:

Social media platforms such as Facebook and Twitter have begun to have a major impact on academic reporting and practices. Over the past few years, many academic research articles have emerged regarding the use of social media in business. Twitter has been studied to understand the role it plays in many aspects of business, from promoting brands and businesses (Greer and Ferguson 2001) to influencing political campaigns (Towner and Dulio 2012). Facebook, the most used social media platform, has been studied in many areas, such as how it affects the value of a company or brand (Plangger, 2012) to fundraising (Vericat 2010).

“Moon, J. (2019). Building a social media application with the MERN stack.” This case study presents the development of a social media app using the MERN stack, with a focus on implementing real time features such as live chat and notifications. The authors discuss the design considerations and technical challenges involved in building the app, as well as the benefits of using the MERN stack for this type of project. [7].

“Comparison Study of MERN Stack and MEAN Stack for Social Networking Sites” (2018): This study compares the MERN stack and MEAN stack (MongoDB, Express.js, AngularJS, and Node.js) for creating sites that talk to each other. The authors made a detailed comparison between the two groups in terms of efficiency, activation, and maintenance and discussed the advantages and disadvantages of each group [8].

IV. RESULTS

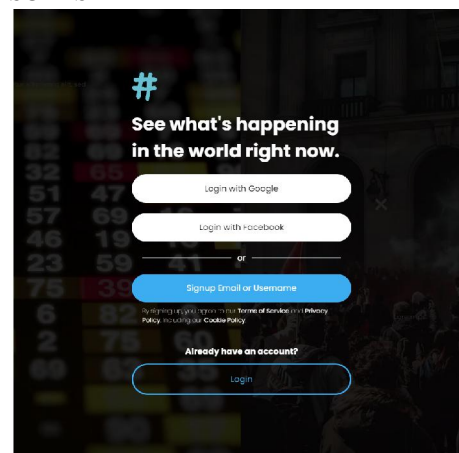
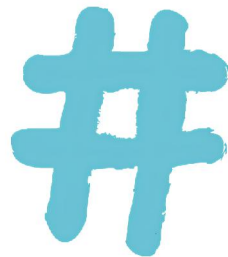


Fig 4 Welcome screen

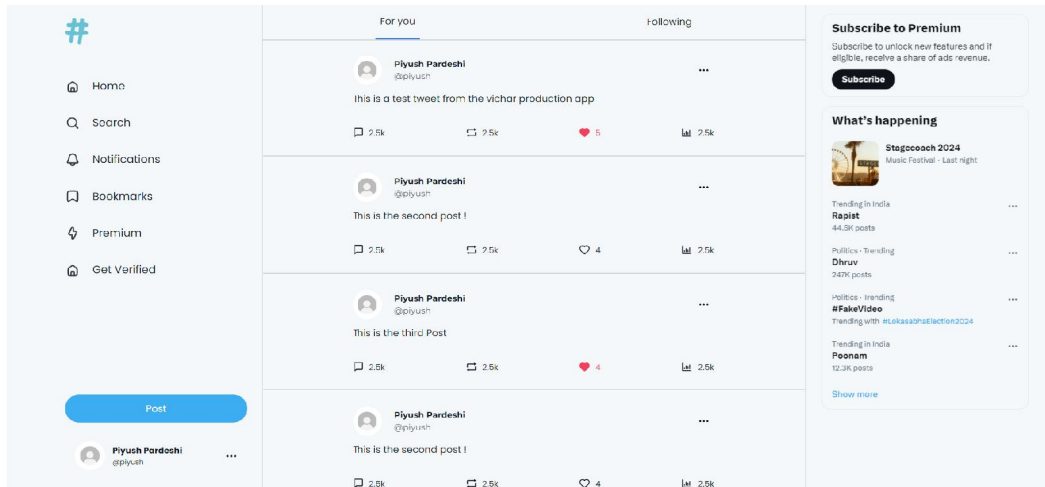


Fig 5 Home page interface

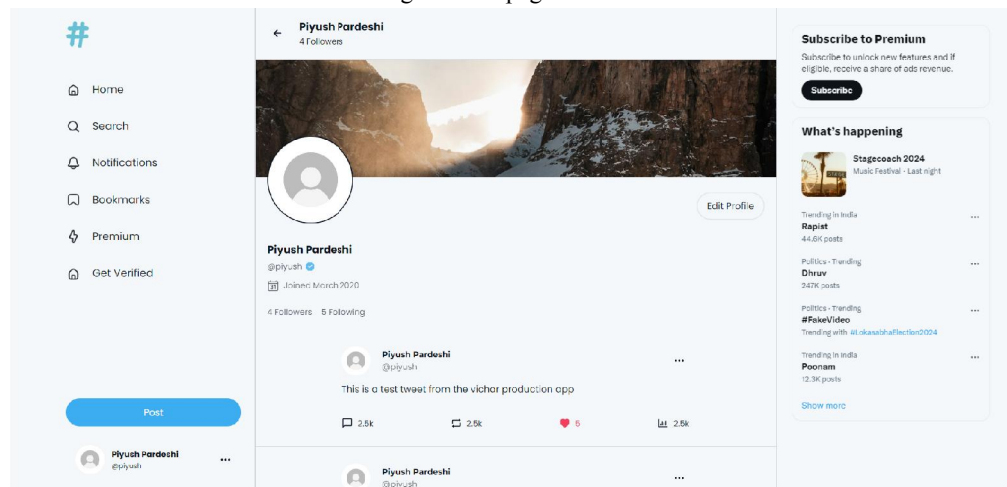


Fig 6 Profile page

V. CONCLUSION

VICHAR has emerged as a new social media platform designed to meet the changing needs of users in today's information-saturated environment. VICHAR aims to bridge the gap between social knowledge and information needs performance, deeper content analysis and creative presentation by leveraging machine learning (ML) and artificial intelligence (AI) capabilities. The platform solves the problem of data transfer by providing features such as news content using short-term memory (LSTM) networks. This allows users to extract key points from long sentences, saving valuable time and expertise. Sentiment analysis using the Python library provides a better understanding of public opinion on popular topics or events by delving into the emotional state of data. This allows users to better understand the information they encounter and make informed decisions. path. Users can create creative visual effects based on instructions, overcoming the limitations of textual communication and improving user engagement and content diversity.

VICHAR was created to prioritize quality and control through a clearly defined Software Development Life Cycle (SDLC). Modular code libraries and CI/CD pipelines simplify the development process, enabling rapid iteration and continuous improvement. The platform leverages a powerful and scalable MERN cluster along with AWS cloud services to deliver high performance and reliability.

Looking to the future, VICHAR's potential impact on social relations is enormous. It has the ability to change user behavior towards the use of useful information and in-depth content analysis. The platform's ability to generate intelligence allows users to become more knowledgeable, create greater awareness, and participate in social media. Future research may explore the long-term effects of VICHAR on user behavior, content creation patterns, and overall social interactions. Additionally, continuous development could focus on expanding existing AI resources, integrating new features such as chatbots or personalized recommendations, and exploring finding a sustainable business model for the platform

In conclusion, VICHAR has an exciting vision for the future of social media. By leveraging the power of artificial intelligence, it strives to offer users the tools they need to work effectively in the information age and express their creativity. VICHAR's journey has just begun, and its ability to transform the social landscape promises to be an exciting chapter in the evolution of online communication. Ities, integrating new features like chatbots or personalized content recommendations, and exploring sustainable business models for the platform.

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