Social Media Website using MERN Technology

## Shruti Korpade, Hemal Kulkarni, Rahul Kumbhar

**Department of Electronics Engineering, Vishwakarma Institute of Technology, 666, Upper Indira Nagar, Bibwewadi, Pune – 411037**

## Email: [shruti.korpade21@vit.edu](mailto:shruti.korpade21@vit.edu), [hemal.kulkarni22@vit.edu](mailto:hemal.kulkarni22@vit.edu), [rahul.kumbhar21@vit.edu](mailto:rahul.kumbhar21@vit.edu), [shital.pawar@vit.edu](mailto:shital.pawar@vit.edu)

Guided by: Prof Shital Pawar

***Abstract: The demand for full-stack developers is on the rise, with an average profit of $110,770 for the best calls in the US, as reported by Real. A full-stack developer is capable of handling both the front-end and back-end of dynamic websites and Internet-based applications. Web development commonly relies on the LAMP stack (Linux, Apache, MySQL, PHP, or Perl) and Java technologies like Java EE and Spring. JavaScript plays a pivotal role in enhancing web functionality, particularly through the MERN stack, which can capture user interactions and manage server-side operations. The MERN stack comprises four core technologies: MongoDB, Express.js, React.js, and Node.js.***

***Keyword: MongoDB, Express, Node, React, JavaScript***

# INTRODUCTION

# The internet has evolved from a social platform to a social network that allows people to share content, ideas, and information. This has changed communication styles in various aspects of our lives, including education, communication, employment, politics, healthcare, public relations, and personal productivity. Social networks serve as content companies and purchasers, allowing users to interact with others with similar interests through various means such as emails, instant messages, online comments, wikis, digital photographs, videos, and blog posts. Social networking has also enabled people with disabilities to express their thoughts and ideas in public. Social networks serve two roles: content providers and buyers, with users choosing who gets access to their information. Users can upload images, multimedia content, and modify their profile and sound to maintain privacy. The demand for full-stack developers is soaring in the digital landscape, with the best calls fetching an average profit of $110,770. These developers are known for their unique skill set, which allows them to navigate both front-end and back-end aspects of dynamic websites and internet-based applications. This introduction explores the significance of full-stack developers and their critical role in web development. It delves into the MERN stack, which includes MongoDB, Express.js, React.js, and Node.js, as a powerful tool for comprehensive web development. As we explore the intricacies of full-stack development, we will uncover the skills and knowledge required to thrive in this dynamic field.

# LITERATURE REVIEW

Cloud computing has become popular for its unlimited computation, storage, and service capabilities, but the growing scale of data generated for real-time processing has become a new challenge. The Internet of Things (IoT) connects a large number of physical devices to the Internet, enabling intelligent systems with limited storage and processing capacity. The integration of Cloud computing and IoT addresses this issue, but real-time processing is still desired. Advanced data gathering/pre-preprocessing at the gateway of the Cloud and IoT is also being explored, such as edge computing. This paper focuses on an effective and efficient data gathering system that collects data from IoT devices and feeds it to the Cloud for further processing and data storage. The Representational State Transfer (REST) model is adopted to develop a RESTful IoT service, and the MERN Stack is used to build a web-based IoT service for scalability and efficiency of development. The proposed system is expected to gather data efficiently and scalable, and the performance of the development system is further verified through experiments [1].

The research paper "Design and Development of a User-Friendly Social Media App using the MERN Stack" discusses the creation of a social media application using MongoDB, Express.js, React, and Node.js technologies. It covers an introduction, literature review, methodology, design, user interface, features, implementation, challenges, testing, evaluation, and conclusion. The paper emphasizes the importance of user-friendly apps and the MERN Stack for development, overcoming challenges, testing processes, and user feedback. The conclusion summarizes key findings and emphasizes the significance of this approach [2].

The research paper "Enhancing the Authentication Mechanism of Social Media Websites using Face Detection" aims to enhance security and authentication mechanisms on social media websites. It covers an introduction, literature review, methodology, face detection algorithm, authentication process, security and privacy considerations, testing and evaluation, results and findings, and future directions. The paper emphasizes the importance of robust security measures in social media websites and introduces face detection as a novel approach. The content and findings depend on the specific study goals and outcomes, so a detailed summary requires access to the paper or additional information [3].

The research paper "Design and Development of Car Rental Website Using MERN Stack" discusses the creation of a car rental website using MongoDB, Express.js, React, and Node.js technologies. It covers the introduction, literature review, methodology, system architecture, user interface, features, implementation challenges, testing, quality assurance, results, user feedback, and conclusion. The paper emphasizes the importance of user-friendly and efficient online platforms for car rental services. It also discusses challenges encountered during development, including security considerations. The paper presents results and user feedback, suggesting areas for future research or improvements [4].

The research paper "Cooked with Care" discusses the design and development of a food ordering website using the MERN Stack, including MongoDB, Express.js, React, and Node.js. It covers the introduction, literature review, methodology, system architecture, user interface, features, implementation challenges, testing, quality assurance, results, user feedback, and conclusion. The paper discusses the significance of the food ordering website in the food delivery industry, the methodology used, user interface design, implementation challenges, testing, quality assurance, results, and future work [5].

The research paper "A Website for a Consultancy using MERN Stack" discusses the design and development of a website for a consultancy firm using the MERN Stack, which includes MongoDB, Express.js, React, and Node.js. It covers an introduction, literature review, methodology, system architecture, user interface, features, functionality, implementation challenges, testing, quality assurance, results, user feedback, and conclusion. The paper discusses the importance of a website for a professional service-oriented business and its specific content and findings depend on project goals and outcomes [6].

# METHODOLOGY

# MERN is MongoDB, Express.js, React.js, and Node.js. Express.js is a web server framework (together with Node.js); React.js is a web purchaser library, and Node.js as server-side platform to MongoDB as a database. MERN combines four cutting-edge technologies in today's development, from front-end to back-end. It saves effort and time for builders to grasp new technology for utility improvement. The stack is supported by a large number of open-source packages and a committed community enabling programmers to boost scalability and maintain software products, thanks to the same JavaScript platform.

# The basis of the MERN stack is Node.js, a server-side technology that provides very excessive overall performance and rapid reaction to all duties, such as huge and complicated data. MERN doesn't need Typescript; all it needs is the flexible basis of React, today's most popular and important front-end technology.

# How do MERN stack technologies work together?

# Fig. 1 MERN Architecture

# Express.js is an open-source framework that is utilized in commercial applications and has a huge community of supporters. As a result, developers can utilize this framework with confidence for their projects of any size, from little to huge. Express.js comes with a slew of support packages and extra developer features to help you build a better system. It does not, however, slow down Node.js. The popular Node.js forum today uses Express.js as the main function.

# Express Tutorial Part 4: Routes and controllers - Learn web development | MDN

# Fig. 2 Structure of express.js

# The startup was launched in October 2007 by MongoDB Inc. It was a component of a PaaS (Platform as a Service) offering akin to Windows Azure and Google App Engine. Later in 2009, it was made open source. Mongo DB is a text-based and NoSQL-based website. Therefore, MongoDB will generally avoid database-based formats to be compatible with all documents such as JSON, which is available in a highly flexible schema called BSON.

# The Benefits and Drawbacks of MongoDB The following are some of MongoDB's most compelling features that have persuaded current users to utilize it: Because MongoDB stores data in JSON format, each collection has its own size and number of documents. They are, nevertheless, extremely adaptable when it comes to archiving. MongoDB data is usually not tied to each other; does not support joining queries as in the RDBMS, so once users install, delete or update, they will not spend much time checking whether they meet the criteria as in the RDBMS or not. MongoDB is easy to measure. In MongoDB, the term "collection" refers to groupings of nodes that have data to share. Users can quickly expand the system by adding a new node to the cluster. Because the unique identity \_id will always be automatically discovered, the query information will always be processed quickly. Data requests will be cached in RAM, requiring less access to the hard disc, resulting in quicker read and write speeds. In addition to many outstanding advantages as above, MongoDB still does have its drawbacks: It does not apply to any transaction models that require a high degree of accuracy due to its non- binding nature. There's no sale medium for banking service operations. Because data perceives RAM to be the focal point of action, it necessitates a significant amount of RAM when executing. Any change to the dereliction data isn't written to the hard drive incontinently, so the chance of losing data from the cause of an unanticipated power failure is an unanticipated power failure is React.js is a view rendering framework that prioritizes efficiency. Many of the heavyweights on the MVVM (Model-View-View Model) framework take a long time to display large amounts of data, such as lists. With React.js, however, this is no longer an issue because it simply presents what changes.

# The Social Platform perpetration will be carried out into three separate ways: back- end creation, frontal - end creation, and eventually testing of the operation. It is not suggested to cover all components of the project in depth because to the thesis restriction. However, it can show all the steps needed to successfully launch the MERN application.

# The Express.js library, which runs on top of Node.js, is used to create the app endpoint. The Mongoose library is also installed to connect to the MongoDB website and store the data in JSON format. Finally, routing logic is implemented, which includes endpoints for interacting with the front-end. A node package called Mongoose is installed to connect the MongoDB website to the Express.js application. Mongoose is an Object Data Modeling tool that aids in the design of MongoDB schemas. Models are defined using the visual Schema interface. Developer can use the Schema to define the fields that are saved in each document, as well as their confirmation styles and dereliction values.

# RESULT

# Full-stack developers are essential in web and application development, bridging the gap between front-end and back-end work. The demand for these professionals is increasing, with the highest-earning professionals earning an average profit of $110,770 in the US. The MERN stack, consisting of MongoDB, Express.js, React.js, and Node.js, is a popular choice for full-stack development. Full-stack developers require a diverse skill set, including proficiency in front-end technologies and back-end languages. Access to training programs and resources is available, and case studies highlight the benefits of full-stack development. Challenges include managing a wide range of technologies and staying updated with industry updates. Full-stack development is holistic, allowing developers to understand the entire application.

# “SHR Media'' is the name of the application.

# There are four pages: a registration page for registration of users, a login page for who already registered, a home page to post images, videos or massage, and a profile page to see all the post that user share with friends.

# C:\Users\Laptop\AppData\Local\Packages\5319275A.WhatsAppDesktop_cv1g1gvanyjgm\TempState\2C573A074732C9DAD456E1E9F9FFC238\WhatsApp Image 2023-11-06 at 01.03.42.jpg

# Fig. 3 Register Page

# C:\Users\Laptop\AppData\Local\Packages\5319275A.WhatsAppDesktop_cv1g1gvanyjgm\TempState\6A12F449790ED7BE96D77AA4C7D9C1C1\WhatsApp Image 2023-11-06 at 01.03.10.jpg

# Fig. 4 Login Page

# C:\Users\Laptop\AppData\Local\Packages\5319275A.WhatsAppDesktop_cv1g1gvanyjgm\TempState\768B2F133C3EA3CA2DB797F5AA593417\WhatsApp Image 2023-11-06 at 01.02.36.jpg

# Fig. 5 Profile Page

# FUTURE SCOPE

# Full-stack developers are essential in web and application development, bridging the gap between front-end and back-end work. The demand for these professionals is increasing, with the highest-earning professionals earning an average profit of $110,770 in the United States. The MERN stack, consisting of MongoDB, Express.js, React.js, and Node.js, is a popular choice for full-stack development. Full-stack developers require a diverse skill set, including proficiency in front-end technologies like HTML, CSS, and JavaScript, as well as back-end languages, databases, and development tools. Training and resources are available for those interested in full-stack development, with educational materials and coding bootcamps making it more accessible. Real-world case studies and best practices highlight the benefits of full-stack development in terms of efficiency, cost-effectiveness, and end-to-end management. Full-stack development stands out for its holistic approach, allowing developers to have a deeper understanding of the entire application, resulting in smoother development cycles and improved communication between teams.

# APPLICATION

# To become a full-stack developer, plan your career path by identifying necessary skills and knowledge areas, and explore available training programs. Consider the MERN stack for web or application development projects, as it offers a robust combination of tools for both front-end and back-end development. Implement best practices and research insights into your projects, especially in managing end-to-end web application development. Focus on skill enhancement, such as improving proficiency in front-end and back-end languages, database management, or modern development tools. Stay informed about emerging trends and technologies in full-stack development to adapt to new challenges and opportunities. Specialize in specific areas of full-stack development or in-demand technologies like AI integration, blockchain, or cybersecurity. Consider becoming a mentor or educator to share knowledge and grow in the field. Explore remote work and freelancing opportunities, adopt agile methodologies, and experiment with new technologies to keep skills fresh and innovative.

# CONCLUSION

# Full-stack developers play a crucial role in the evolving web and application development industry. They possess a unique skill set that allows them to manage both front-end and back-end aspects of projects. The MERN stack, consisting of MongoDB, Express.js, React.js, and Node.js, is a popular choice for full-stack development. Full-stack developers need a diverse skill set, including front-end technologies and back-end languages. Access to training programs and resources makes it more accessible for individuals to enter the field. The MERN stack's efficiency and cost-effectiveness are highlighted in real-world success stories. The field is constantly evolving, with emerging trends like serverless architecture, microservices, AI integration, cross-platform development, and blockchain applications. Success in this dynamic field requires adapting to changing technologies and specialization.

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